Chapter IV: Environmental Consequences

Introduction

This chapter describes the probable consequences (or impacts) that could result under the alternatives described in this environmental assessment. The chapter is divided into three parts. The Introduction section describes the purpose and layout of the chapter. The Impact Analysis section provides an overview of the methodologies employed in Chapter IV, Environmental Consequences, that are common to all resource topic areas. Resource-specific impact methodologies are provided in Appendix E, Environmental Consequences Methodologies. The Analysis of Environmental Consequences section describes the impacts anticipated under each alternative, and is organized by alternative. Environmental impacts are summarized in table II-1: Summary of Environmental Consequences, located at the end of Chapter II, Alternatives, of this document.

Impact Analysis

An Impact Analysis section is presented for each individual resource topic, under each alternative. Resource-specific impact methodologies are provided in Appendix E, Environmental Consequences Methodologies. Impacts are evaluated based on context, duration, intensity, and whether they are direct, indirect, or cumulative. In addition, impairment to park resources and values is considered. Alternative 1 (the No Action Alternative) describes the status quo. This alternative provides a baseline from which to compare the action alternatives, to evaluate the magnitude of proposed changes, and to measure the environmental effects of these changes.

The following guidelines were used to identify the context, duration, intensity (or magnitude), and type of impact.

- *Context*. The context considers whether the impact would be local or regional. For the purposes of this analysis, local impacts are those that would occur within the immediate vicinity of the Yosemite Lodge Area Redevelopment, and regional impacts area those that would occur in Yosemite Valley, unless otherwise noted.
- *Duration*. The duration of an impact is noted as either short term or long term and is defined as a range of years.
- *Intensity*. Indicators of the intensity of an impact, whether it is negligible, minor, moderate, or major, are included in the impact analysis and specifically defined by topic area in Appendix E, Environmental Consequences Methodologies.
- *Type*. The type of impact refers to whether the effect is considered beneficial or adverse. Beneficial impacts would improve resource conditions. Adverse impacts would deplete or negatively alter resources. Mitigating actions listed in Appendix C, Mitigation Measures Common to All Action Alternatives, would be taken during implementation of the action alternatives. With the exception of the cultural resources analysis, all impacts are assessed assuming that mitigation measures have been implemented.

Cumulative Impacts

The Council on Environmental Quality (Regulation 1508.7) describes a cumulative impact as follows:

> A "cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The cumulative projects addressed in this analysis include past and present actions as well as any planning or development activity currently being implemented or planned for implementation in the reasonably foreseeable future. Cumulative actions are evaluated in conjunction with the impacts of an alternative to determine if they have any additive effects on a particular resource. Because most of the cumulative projects are in the early planning stages, the evaluation of cumulative impacts was based on a general description of the projects. Appendix F, Cumulative Projects, contains the list of cumulative projects included in the cumulative impacts analysis.

Impairment

Impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. The need to analyze and disclose impairment impacts originates from the 1916 Organic Act, which mandated the National Park Service "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

An impact would be less likely to constitute impairment if it is an unavoidable result, which cannot reasonably be further mitigated, of an action necessary to preserve or restore the integrity of park resources or values (NPS 2000c). An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park
- Identified as a goal in the park's *General Management Plan* (NPS 1980) or other relevant National Park Service planning documents

Impairment of park resources was evaluated on the basis of the type and intensity of impacts, and in terms of the types of resources affected. Overall, beneficial impacts would not constitute impairment. With respect to the intensity of impacts, negligible and minor adverse impacts are not of sufficient magnitude to constitute impairment. Moderate and major adverse impacts may constitute impairment, but not automatically. Rather, these impacts must be analyzed with respect to the three criteria presented above. Impairment is generally considered for geologic, hydrological, biological, cultural, and scenic resources and for recreation. Impairment is addressed in the conclusion section of each impact topic under each alternative.

Analysis of Environmental Consequences

Alternative 1

Natural Resources

Geology, Geologic Hazards, and Soils

Analysis

Operation-related Effects of Seismic Safety. Yosemite Valley is susceptible to earthquake ground shaking generated in seismically active zones on the east and west margins of the Sierra Nevada. This condition would continue under Alternative 1. Although the expected ground motion would be low compared to that in areas closer to the causative faults, the ground motion generated in the project area during a major earthquake would be felt by most people and would cause varying levels of structural damage. Older or poorly constructed buildings would experience the most damage, which could include damage to brick chimneys, cracked plaster, misaligned doorways, furniture upset, and objects falling off shelves. Although most buildings at Yosemite Lodge are structurally sound, these building could experience some damage during an earthquake.

Earthquakes are unavoidable, and those in the Sierra Nevada region would continue to expose visitors to potential hazards from ground shaking. Under Alternative 1, the National Park Service would not replace structurally failing buildings with newer, more stable buildings and would only conduct maintenance work, which would not include seismic retrofit. The National Park Service would retain current management policies pertaining to geologic resources and hazards, including those implemented to protect visitors and reduce damage to park infrastructure. The National Park Service, in cooperation with the U.S. Geological Survey, would continue to address geologic hazards in planning and management activities to minimize the potential impact on park visitors and facilities. The National Park Service would continue to avoid locating facilities in areas where such facilities could be directly affected by secondary effects of ground shaking, such as ground failure or rockfall. The National Park Service would also continue the practice of conducting site-specific geologic analysis prior to the construction of buildings and other facilities to determine potential soil instability.

Impact Significance. Local, long-term, minor, adverse impact.

Operational Effects of Rockfall Hazards. Park facilities most susceptible to damage from rockfalls are those closest to shear granite cliffs along the base of talus zone. Camp 4 and the search and rescue site would continue to be located within both the base of talus and shadow line zones and would be susceptible to rockfall hazards at the Yosemite Lodge Area Redevelopment site. Under Alternative 1, Camp 4 and the search and rescue site would remain in their current locations and would continue to have a moderate adverse impact.

Other existing buildings, such as the standard-occupancy lodging units (i.e., auditoriums with an occupancy of less than 300 people) and the Lodge restaurants (i.e., assembly halls with an occupancy of over 300 people) would remain within the shadow line zone, constituting a minor to moderate adverse impact. Alternative 1 would not remove or relocate existing facilities or change occupancy categories, and the level of risk to life and property associated with rockfall hazards would remain the same as it is today. Potential impacts to people and property due to rockfalls

would continue; however, due to the infrequency, randomness, and low probability of rockfalls causing substantial injury or damage, the impact would be moderate and adverse.

Impact Significance. Local, long-term, moderate, adverse impact.

Operation-related Effects on Soils. Existing structures, roads, trails, campgrounds, and parking facilities would continue to adversely affect soils by contributing to erosion, soil compaction, and removal of surface soils. Soils associated with the Lodge area, such as Dinky Like Stony Loamy Sand and Leidig Loamy Very Fine Sand, would continue to be susceptible to compaction and erosion, caused mainly by vehicles and visitor foot traffic in unpaved areas. Removal of vegetation in heavily traveled areas further reduces soil stability. Continued uncontrolled access to the river would contribute to erosion and decreased bank stability. The adverse soil impacts within Yosemite Valley would remain unchanged under Alternative 1.

Impact Significance. Local, long-term, minor, adverse impact.

Summary of Alternative 1 Impacts. Alternative 1 would have a local, long-term, minor to moderate, adverse impact on geologic resources and soils associated with hazards from unavoidable seismic ground shaking, the potential for infrequent but damaging rockfalls due to the proximity of facilities to the sheer granite cliffs, and continued soil compaction, surface runoff, and soil erosion.

Cumulative Impacts

Cumulative impacts to geologic resources and soil resources discussed herein are based on analysis of past, present, and reasonably foreseeable future actions, in combination with potential effects of this alternative. The projects identified below include only those projects that could affect geologic resources within Yosemite Valley.

Earthquakes are unavoidable and unpredictable and represent a potentially long-term adverse impact to public health and safety. However, past, present, and reasonably foreseeable future actions would result in a local, long-term, minor, beneficial cumulative impact to public health and safety with respect to seismic hazards, due to the efforts of the National Park Service to apply current building codes and consider geologic and seismic hazards in planning and management activities. These efforts protect site facilities in areas that could be directly affected by ground failure. Rockfalls are inherent to the wilderness setting and would remain an unavoidable and unpredictable hazard within Yosemite Valley. Actions proposed in the *Yosemite Valley Plan* would remove and relocate facilities from the base of talus zone, consistent with the *Geologic Hazard Guidelines*. For example, plans proposed under the Curry Village and East Yosemite Valley Campgrounds Improvement Project and Curry Village Employee Housing projects incorporate the placement of essential, special, and standard facilities outside the base of talus and shadow line zones, as appropriate. Although rockfall hazards cannot be eliminated, the *Yosemite Valley Plan* would remove the potential hazard-vulnerable facilities, thereby resulting in a regional, long-term, minor, beneficial impact.

Although certain projects proposed within Yosemite Valley could increase soil degradation during construction activities or due to increased development, most proposed projects in Yosemite Valley, especially those included in the *Yosemite Valley Plan*, contain restoration elements to protect valuable soils resources. Full implementation of the *Yosemite Valley Plan*

would restore approximately 177 acres of soils, of which approximately 136 acres would be high-value resource soils. The *Yosemite Valley Plan* calls for the Ecological Restoration of Flood-damaged Campgrounds to revegetate and restore degraded soils in highly disturbed areas, as well as the removal of roads through Stoneman Meadow and the southern portion of Ahwahnee Meadow to protect valuable meadow soils. The Lower Yosemite Fall Project removes the existing parking lot and restores it to natural conditions. However, construction of some new facilities under the *Yosemite Valley Plan*, such as construction projects related to campgrounds, lodging, employee housing, and other facilities, could result short-term or long-term degradation of soil resources. Although these types of projects may have site-specific, short-term, adverse effects (e.g., potential short-term construction erosion and soil loss), an overriding objective of these projects is to restore and manage natural resources and reduce soil degradation. The cumulative projects would result in a net regional, long-term, moderate, beneficial impact on soil resources.

Alternative 1 and the cumulative projects would result in a regional, long-term, minor, beneficial impact with respect to the overall seismic safety and reduction of rockfall hazards. Although the earthquake and rockfall hazard would remain unchanged at the project site under Alternative 1, other projects within the Valley would comply with the *Geologic Hazard Guidelines* and would reduce the overall risk of geologic hazards. The regional, long-term, moderate, beneficial impact to soil resources under the cumulative projects would offset the potential soil degradation under Alternative 1 at the project site.

Impairment

Alternative 1 would have a local, long-term, minor to moderate, adverse impact on geologic resources and soils. Although soil resources are a key natural resource component within Yosemite National Park, the effect of this alternative on soils would occur in localized areas and would not be considered severe. The extent and quality of soil resources throughout the remainder of Yosemite National Park would remain unaffected by this alternative. Therefore, Alternative 1 would not impair geologic resources for future generations.

Floodplains and Water Resources

Analysis

This analysis assesses impacts to floodplain values and water resources, including hydrology and water quality. Impacts to water resources are characterized as long-term alterations or restoration of hydrologic processes (e.g., water flow and flood regime) or water quality (e.g., turbidity, nonpoint-source pollution from vehicles or recreational use).

Impact to the Merced River Floodplain. Under Alternative 1, guest lodging units and Lodge facilities associated with the Yosemite Lodge Area Redevelopment site would remain within the 100-year floodplain of the Merced River. A major flood, such as the event that occurred in January 1997, is likely to occur again in the future. Even though a 100-year storm has only a 1% chance of occurring in a single year, there is a possibility that such a storm could occur in consecutive years or a few times per decade. Flood water generated from a 100-year event would inundate the facilities within the floodplain, as was observed in 1997. Flood inundation can injure visitors and damage facilities, as well as present problematic visitor evacuation scenarios. These three adverse outcomes were realized in the January 1997 flood.

Under Alternative 1, the buildings and other structures that are currently in the floodplain could divert, focus, or otherwise alter flood flow during another major flood in Yosemite Valley, injuring visitors and damaging buildings. When obstacles such as buildings and roads are placed within a floodplain, natural water flow across the floodplain is altered and can result in adverse effects, not only to the floodplain ecosystem and natural flow regime, but also to the facilities the flood water encounters. Roads, buildings, and parking areas can increase flow velocities and divert and channelize flood flow, leading to riverbank scour, increased sedimentation, soil removal, accelerated erosion, and degraded water quality conditions. The January 1997 flood caused these effects, as well as destroyed several facilities throughout Yosemite Valley and at the Yosemite Lodge Area Redevelopment site.

Impact Significance. Local, long-term, moderate, adverse impact.

Impacts of Human-made Flow Diversion. The diversion dam located at the confluence of Yosemite Creek and the Merced River alters the natural flow regime of the river and changes the natural flow conditions on the floodplain. Under Alternative 1, this flow diversion would remain in place; because its adverse effect on the floodplain is realized only during periods of high flows, the overall impact on the floodplain is considered minor.

Under Alternative 1, the revetment areas currently in place along Yosemite Creek would remain. Streambank erosion and destabilization can be observed along this protected section and, based on field observation, erosive flows are affecting the revetment at high river flows. However, because the revetment is limited in length, the overall impact to Yosemite Creek is considered minor.

Impact Significance. Local, long-term, minor, adverse impact.

Impacts of Drainage and Impervious Surfaces. Under Alternative 1, the drainage system would operate as it does today, and the overlying impervious surfaces would remain in place. For example, stormwater flow at Camp 4 is conveyed through shallow drainage ditches to a main ditch along Northside Drive. The adequacy of site drainage depends on the amount of surface at a site that is impervious to surface water infiltration. Impervious surfaces impede natural infiltration of surface water, whereas pervious surfaces allow surface water to readily infiltrate into the ground. Semipervious surfaces allow only partial infiltration. There are 738,500 square feet of impervious surfaces at the Yosemite Lodge Area Redevelopment site and 3,651,500 square feet of pervious surfaces. The semipervious surfaces account for 278,600 square feet and consist of such surfaces as decomposed granite trails and dirt trails. Within the 100-year floodplain (approximately 2,201,239 square feet), there are 151,600 square feet of impervious surfaces and 93,500 square feet of semipervious surfaces (see table II-1 in Chapter II, Alternatives). The existing Yosemite Lodge guest accommodations, paved trails, and associated facilities constitute the impervious surfaces in the floodplain, while the semipervious areas include dirt trails and popular visitor-use areas.

Under Alternative 1, impervious surfaces would continue to increase storm drainage volumes and flow velocities during storm events. When stormwater cannot infiltrate into the ground or the flow energy is not reduced by vegetation, flows run over the impervious surfaces (such as paved parking lots, concrete walkways, or roofs) to the drainage outlet. These flows arrive at the outlet structure at high volumes and velocity. Localized flooding occurs when these outlet structures do not have the capacity to accommodate the flows.

In areas where soil cover is compacted due to visitor use (i.e., Camp 4, trails, and vehicle parking areas), the surface can be essentially impervious, especially if the surface is on a slope. This condition can lead to greater erosion and sediment entrainment. In areas containing a large amount of impervious surfaces, the volume and velocity of storm flows can contribute to entrainment of pollutants (discussed further below), cause erosion at outlet areas, and lead to localized flooding. Even though the drainage and surface cover conditions at the project site may contribute to the adverse effects of drainage discussed above, the overall impact is typically short term in duration and may occur only in localized areas; for these reasons, the impact is considered minor.

Impact Significance. Local, long-term, minor, adverse impact.

Impacts to Water Quality. Under Alternative 1, remediation activities at the former gas station adjacent to Camp 4 and the former staff dormitory at the western end of Yosemite Lodge would continue. The Regional Water Quality Control Board would continue to oversee the current groundwater remediation activities at the sites. Site cleanup would continue until the Regional Water Quality Control Board determined that the sites have been remediated to levels protective of public health and safety, and the remediation cases are closed. The impact of continued remediation efforts would be local, long term, moderate, and beneficial.

Under Alternative 1, surface water quality and the sources that affect water quality would remain as they are today. Nonpoint sources such as petroleum from parking lots and sediments from eroded soil surfaces are capable of degrading water quality in Yosemite Creek and the Merced River. Under current conditions, surface water runoff entrains and transports surface contaminants to these water sources. Additionally, visitor use along the banks of the Merced River has resulted in soil compaction, erosion, and riparian vegetation loss or decline, with consequent bank instability. The ultimate effect of bank instability would continue to be unnatural erosion and sediment deposition into the river. Although Yosemite Creek and the Merced River typically carry sediment, unnatural increases in sediment load from erosion can adversely affect water quality for aquatic species. This local, long-term, adverse impact to riverbank stability would continue to occur due to visitor access to the river in some locations. Recreational uses such as swimming and rafting would continue to be sources of nonpoint-source pollution. These facilities and uses in and immediately adjacent to the Merced River would continue to adversely affect water quality.

Impact Significance. Local, long-term, minor, beneficial impact.

Summary of Alternative 1 Impacts. Alternative 1 would have a local, long-term, minor to moderate, adverse effect on floodplains and water resources. The buildings that are currently in the floodplain could divert, focus, or otherwise alter flood flow during another major flood in Yosemite Valley, resulting in injury to visitors and damage to buildings. The diversion dam and revetments would remain in place, adversely affecting the Merced River floodplain and Yosemite Creek flow. Impervious surface conditions at the site would continue to contribute to adverse effects on drainage system capacity, and the facilities and uses in and immediately adjacent to the Merced River would continue to adversely affect water quality. The beneficial impacts on water quality associated with remediation of leaking underground storage tank sites would somewhat offset these adverse effects.

Cumulative Impacts

Cumulative effects on floodplains and water resources are based on analysis of past, present, and reasonably foreseeable future actions in Yosemite Valley, in combination with potential effects of Alternative 1.

A variety of projects have historically affected the Merced River by introducing obstructions into its channels, modifying the floodplain, and adversely affecting water quality. Alterations to hydrology have occurred through development and use within the river corridor since Euro-American settlement. Examples of actions that have had adverse effects on the hydrologic processes include placement of riprap, removal of large woody debris, and construction of bridges, dikes, floodwalls, impoundments, dams, and buildings. Conversely, actions such as riverbank restoration projects, removal of impoundments and bridges, and limiting visitor use to particular areas help restore the natural river flow and reduce bank erosion.

Reasonably foreseeable future projects that would have beneficial impacts on hydrologic processes and water quality include such restoration actions as those presented in the *Yosemite Valley Plan*. Elements of the *Yosemite Valley Plan* include removal of Sugar Pine Bridge, which constrains flows of the Merced River, rehabilitation of the Yosemite Falls corridor, restoration to natural conditions of campgrounds located within the floodplain, and removal of facilities from the 100-year floodplain. Alternatively, adverse impacts could occur by implementing the *Yosemite Valley Plan* projects, including construction of additional lodging, campsites, and a visitor transit center in the Valley. Overall, however, the *Yosemite Valley Plan* would have a beneficial effect on river hydrologic processes and water quality. The Lower Yosemite Fall Project consists of improving and rehabilitating the physical infrastructure at the 56-acre Lower Yosemite Fall area. The project work includes rebuilding/rehabilitating trails; removing several trail segments; rebuilding/rehabilitating five pedestrian bridges; constructing one new pedestrian bridge; removing one pedestrian bridge; removing the existing parking area and revegetating it to natural conditions. The Ecological Restoration of Flood-damaged Campgrounds project would restore natural processes to an ecosystem so that the area can recover from past human development and activities. Cumulatively, these projects are anticipated to have beneficial impacts on hydrologic processes and water quality of the Merced River.

While some of the past, present, and reasonably foreseeable future projects in Yosemite Valley would ultimately remove impediments to stream flows, enhance water quality, rehabilitate eroded stream banks, and reduce degradation of stream characteristics, others would result in adverse water quality impacts and bank erosion. However, compared to the number of projects designed with elements or intent to improve hydrologic systems, there are fewer projects that would degrade water resources. Therefore, the cumulative projects would result in a regional, long-term, moderate, beneficial impact to hydrologic processes and water quality.

The past, present, and future projects considered cumulatively with Alternative 1 would have a regional, long-term, moderate, beneficial effect on hydrologic processes and water quality, because the long-term beneficial effects associated with the overall effort to improve water resources in Yosemite Valley and return natural flow to river and tributary systems overshadow the minor to moderate adverse impacts that would result from Alternative 1.

Impairment

Alternative 1 would result in a local, long-term, minor to moderate, adverse effect on floodplains and water resources. These adverse effects would be localized and are not considered severe. Therefore, Alternative 1 would not impair water resources within Yosemite National Park for future generations.

Wetlands

Analysis

Operation-related Effects on Wetlands. Alternative 1 would continue to adversely affect the size, integrity, and connectivity of waters of the U.S. and Cowardin wetlands[1] (palustrine forest, palustrine scrub shrub, palustrine emergent, and riverine), primarily in the floodplain at the Yosemite Lodge Area Redevelopment site.

The project area contains a total of 16.28 acres of wetlands. Encroachment by conifers would continue to reduce the size of wetlands in the floodplain and convert wetland habitat to upland habitat. Wetlands located outside the floodplain would remain the same.

The integrity of palustrine emergent wetlands would continue to be degraded due to non-native plant species and conifer encroachment. Heavy recreation-related foot traffic and trampling on ill-defined trails would continue to degrade wetlands in the floodplain. Overhanging riparian vegetation along intermittent/ephemeral drainages at Camp 4, Yosemite Creek, and the Merced River within the project area would remain absent, resulting in a lack of nutrients, organic matter, and shade to riverine systems.

Wetland connectivity would continue to be compromised in the project area. Wetlands would continue to degrade and fragment due to heavy foot traffic at Camp 4 and along ill-defined trails in the floodplain. Connections between the Merced River and upland habitats would remain compromised by roads, structures, utilities, and water diversions. The flow across the floodplain south of Yosemite Lodge would continue to be blocked. These actions have substantially altered river morphology at the confluence of Yosemite Creek and Merced River, desiccated floodplain soils, and encouraged conifer and non-native plant invasion.

Overall, continued habitat degradation would result in a long-term, moderate, adverse impact to wetland and aquatic habitats within the project area.

Impact Significance. Local, long-term, moderate, adverse impact.

Summary of Alternative 1 Impacts. Alternative 1 would continue to have a local, long-term, moderate, adverse effect on wetlands in the project area by diminishing the size, integrity, and connectivity of jurisdictional wetlands and Cowardin wetlands (palustrine forest, palustrine scrub shrub, palustrine emergent, and riverine). Such impacts include habitat conversion due to conifer and non-native species invasion, degradation of wetlands due to development within the floodplain and heavy recreation-related foot traffic, and fragmentation due to the lack of hydrologic connectivity between wetlands.

[1] The extent of waters of the U.S. is equivalent to the area of Cowardin wetlands in the project area. Waters of the U.S. and Cowardin wetlands are collectively referred to as wetlands.

Cumulative Impacts

Parkwide planning efforts such as implementation of the *Yosemite Valley Plan*, Merced River Plan, and the Fire Management Plan Update would provide benefits to the size, integrity, and connectivity of wetlands. These plans would improve resource protection and increase knowledge of resources, resulting in a long-term beneficial impact on wetlands. The Merced River Plan in particular would affect wetlands through zoning and management designed to protect the river system and adjacent wetlands, providing a long-term, major, beneficial impact.

Throughout Yosemite Valley, a net gain of approximately 118 acres of wetlands would take place under the *Yosemite Valley Plan*. About 141 acres of wetlands would be restored, 12 acres of new development in wetlands would take place, and 11 acres of redevelopment in degraded wetlands could take place, resulting in a major beneficial impact to wetlands in Yosemite Valley. Projects approved or planned for construction that could have beneficial effects on wetlands include Ecological Restoration at Eagle Creek, Cook's Meadow Ecological Restoration, and Ecological Restoration of Flood-damaged Campgrounds. Erosion control and mitigation as a result of these projects could enhance and strengthen palustrine forest and palustrine scrub shrub wetlands. The Eagle Creek project would revegetate currently denuded riverbanks that were formerly palustrine forest and palustrine scrub shrub wetlands. These restoration projects would have localized, long-term, beneficial impacts on wetlands.

Some of the past, present, and future projects in Yosemite Valley could have short-term, construction-related, adverse impacts to wetland resources, such as the Curry Village and East Yosemite Valley Campgrounds Improvement Project, Curry Village Employee Housing, Lower Yosemite Fall Project.

Overall, the cumulative projects would have a regional, long-term, major, beneficial impact on Yosemite Valley wetlands associated with the comprehensive planning and restoration efforts. The cumulative beneficial impact to wetlands would be somewhat offset by the adverse construction-related impacts associated with the proposed development projects.

These cumulative projects and Alternative 1 would have an overall regional, long-term, moderate, beneficial impact on wetlands in the area. The beneficial impacts of wetland restoration efforts in Yosemite Valley would offset the project-related adverse effects associated with diminishment of the size, integrity, and connectivity of wetlands in the project area.

Impairment

Alternative 1 would result in a local, long-term, moderate, adverse impact to wetlands at the Yosemite Lodge Area Redevelopment site. Although wetlands are a key resource within the project vicinity, the effect of this alternative on wetlands would be primarily localized and would not be considered severe. Rather, the extent and quality of wetlands throughout the project vicinity would remain unaffected. Therefore, Alternative 1 would not impair wetland resources for future generations.

Vegetation

Analysis

Operation-related Effects on Vegetation. As identified in the *Final Yosemite Valley Plan/SEIS*, Alternative 1 would not provide a comprehensive approach to improvements, restoration, or management of natural and developed plant communities, resulting in continued and localized, long-term degradation. The continued management of vegetation at the Yosemite Lodge Area Redevelopment site would result in a local, long-term, moderate, adverse impact.

It is anticipated that overall visitor demand and use of the park would continue to increase. Visitor use would continue to affect vegetation by spreading non-native species (both plant and wildlife), compacting soils, reducing vegetation cover, altering streambanks, and inducing erosion.

Approximately 4,662 evergreen and deciduous trees would remain in the project site, including oaks, maples, pines, incense-cedars, and firs.

Upland Communities. The extent of upland developed communities in the project area is unnaturally large due to the lack of fire and modified hydrology, which has resulted in the encroachment of conifers into former meadows, riparian areas, and California black oak woodlands. These physical effects would continue under Alternative 1, due to the National Park Service's inability to manage trees using prescribed fire within and around developed areas. Upland developed communities would continue to expand and become more contiguous throughout the project area (including the Yosemite Lodge area and Camp 4) as existing and newly established conifers dry out soils, and woody debris and duff accumulate, gradually raising and drying the underlying substrate over time.

The unnaturally dense stands of incense-cedar and ponderosa pine would continue to contribute to the spread of annosus root rot throughout the project area (see figure III-1), leading to continued highly intense levels of management efforts to remove hazard trees (dead or dying trees) from developed sites and road corridors.

California black oak communities near Yosemite Creek and west of Camp 4 would continue to decline due to existing development, fragmentation caused by roads, encroachment of conifers, and lack of prescribed burns, all of which would continue to inhibit regeneration. Additionally, the unnaturally moist area would continue to encourage armillaria root rot, causing tree failure either through collapse or increased susceptibility to other diseases.

Diversity and productivity of upland forest communities are directly related to the integrity of their structure (overstory, understory, and ground layers). The natural structure of developed and disturbed upland communities in the project area has been severely degraded due to lack of fire, resulting in an increasingly dense overgrown understory and a shift in species composition over time to more shade-tolerant coniferous species such as ponderosa pine and incense-cedar. Therefore, under Alternative 1, the integrity, diversity, and overall productivity of the understory would continue to be affected by a lack of native vegetation and a reduced ability to regenerate due to trampling in developed zones, including the Yosemite Lodge area and Camp 4.

Meadow Communities. Many historic meadows have been converted to upland vegetation types or no longer exhibit meadow characteristics due to development. The size and continuity of meadow communities would continue to gradually decrease because of conifer encroachment, loss of natural drainage patterns due to roads, bicycle paths with inadequate culverts, and river diversions (e.g., channelization of the confluence of Yosemite Creek and the Merced River). Existing development and roads in the floodplain would continue to fragment meadows, riparian areas, and wetlands. The connectedness of meadow systems within the project area would continue to be minimal, at best, due to the unnaturally large areas of conifers between meadows and the loss of oxbow and cutoff channels that provide links from meadow to meadow. Meadows in the project area would continue to have decreased integrity due to the presence of non-native plants and the introduction of stormwater runoff contaminants from adjacent roads, parking areas, and lodging facilities.

Riparian Communities. Riparian areas along ephemeral drainages in the project area (Camp 4, Yosemite Lodge area, and the floodplain) would continue to be nearly nonexistent due to the level of development, uncontrolled trampling, paving, and roads, which would continue to diminish the size and continuity of these areas. Trampling would continue to result in discontinuous, narrow bands of riparian vegetation, disrupted by long stretches of denuded and eroding riverbank along Yosemite Creek, with little or no connection with either upland or meadow vegetation. The structure and diversity of riparian areas would continue to be affected by encroaching conifers (along Merced River, Yosemite Creek, and ephemeral drainages) and non-native plant species (Himalayan blackberry and foxglove along riverbanks). Narrow bands of existing riparian vegetation would continue to be prevented from expanding and reproducing because of existing development in the floodplain.

Impact Significance. Local, long-term, moderate, adverse impact.

Summary of Alternative 1 Impacts. Alternative 1 would not provide a comprehensive approach to improvements, restoration, or management of natural and developed plant communities, resulting in continued and localized, long-term degradation. The size, continuity, and integrity of vegetation would continue to diminish due to conifer invasion in upland, meadow, and riparian communities; lack of fire; spread of fungus root rot (annosus and armillaria); human-related disturbances (including trampling); and spread of non-native species. The continued management of vegetation at the Yosemite Lodge Area Redevelopment site would result in a local, long-term, moderate, adverse impact.

Cumulative Impacts

Cumulative effects to vegetation discussed herein are based on analysis of past, present, and reasonably foreseeable future actions in Yosemite Valley, in combination with potential effects of this alternative. The projects identified below include those projects that have the potential to affect local vegetation patterns (i.e., within the river corridor) as well as regional vegetation patterns in the project vicinity.

Vegetation in Yosemite Valley has been substantially altered by development and visitor activities. These changes have negatively influenced the size, form, and function of vegetation communities and the plants and wildlife that inhabit them. Cumulative beneficial effects on vegetation would include restoration, rehabilitation projects, and ecosystem management. Cumulative adverse effects would be related to increased facilities and visitor demand.

Reasonably foreseeable future actions within Yosemite Valley would result in an overall net benefit to vegetation (e.g., Merced River at Eagle Creek Ecological Restoration and implementation of the *Yosemite Valley Plan*, Merced River Plan, Cook's Meadow Ecological Restoration, and the Fire Management Plan Update). Implementation of the *Yosemite Valley Plan* would restore approximately 175 acres, of which approximately 160 acres would be highly valued resource vegetation in Yosemite Valley. Such proposed actions include removal and restoration of several campgrounds; removal of roads through Stoneman and Ahwahnee Meadows; and natural vegetation restoration actions in several areas. The Merced River Plan protects river-related natural resources through the application of seven management elements, including River Protection Overlay, management zoning, protection and enhancement of Outstandingly Remarkable Values, implementation of a Visitor Experience and Resource Protection framework, boundary delineation, classifications, and the Section 7 (of the Wild and Scenic Rivers Act) determination process. Cook's Meadow Ecological Restoration reduced non-native plant species encroachment and reduced habitat fragmentation by removing a road and trail and reconstructing an elevated boardwalk. The Fire Management Plan Update prescribes fire management practices to restore natural resources, which would have beneficial impacts on vegetation.

Although certain *Yosemite Valley Plan* projects and the Lower Yosemite Fall Project have the potential to adversely affect local vegetation, such as construction of new parking and lodging facilities and expansion of campgrounds in Yosemite Valley, these projects would be designed to ensure the long-term protection of sensitive vegetation communities.

While some of the past, present, and future projects in Yosemite Valley could have short-term, construction-related, adverse impacts on vegetation patterns, overall the cumulative projects would increase the size, connectivity, and integrity of vegetation within the project area, resulting in a regional, long-term, moderate, beneficial effect on vegetation.

Alternative 1 and the cumulative projects in Yosemite Valley would result in a local, long-term, moderate, beneficial impact on vegetation, due to the overall emphasis on restoring disturbed or developed land to natural conditions and improving the size, continuity, and integrity of vegetation. These beneficial effects would outweigh the moderate adverse effect associated with Alternative 1 and the adverse effects of cumulative development projects and construction activities.

Impairment

Alternative 1 would result in a local, long-term, moderate, adverse impact. Although vegetation is a key resource within Yosemite Valley, the effect of this alternative on vegetation would be primarily localized and would not be considered severe. The extent and quality of vegetation adjacent to the project area would remain unaffected. Therefore, Alternative 1 would not impair vegetation resources for future generations.

Wildlife

Analysis

Operation-related Effects on Wildlife. As identified in the *Final Yosemite Valley Plan/SEIS*, Alternative 1 would have a long-term adverse effect on wildlife. Under Alternative 1, operations and use of the Yosemite Lodge Area Redevelopment site would remain similar to existing conditions. The current use of these areas contributes to adverse effects on wildlife through degradation of habitat and direct disturbance. Adverse effects of Alternative 1 include habitat fragmentation due to buildings, roads, parking lots, and other development; vehicle and pedestrian noise; human presence; and other effects associated with general visitor use of wildlife habitats.

Habitat fragmentation under Alternative 1 would continue to have an adverse impact on wildlife and their habitat. The effect of this fragmentation on wildlife in the Yosemite Lodge area and Camp 4 would be exacerbated by the disturbance caused by large numbers of people in concentrated areas of the park; their unrestrained access to riparian habitat, wetlands, and other sensitive habitats along Yosemite Creek and the Merced River; and the high density of existing development. Fill material, infrastructure, and buildings at Yosemite Lodge would continue to occupy areas that in the past were naturally complex riparian habitat. Human trampling would continue to affect remaining riparian habitat along the Merced River. No restoration of riparian or wetland habitat would occur under Alternative 1. Conditioning of black bears and other wildlife species to human food would continue at a high level in the project area due to direct feeding and trash overflow.

Heavy vehicle traffic on Northside Drive would continue to fragment upland habitats and reduce habitat quality for species such as spotted owls, bats, and ringtails. Wildlife using upland habitats in areas along the road would continue to be affected by traffic noise, lights, and moving vehicles, resulting in roadway mortality of some species. Traffic would continue to exacerbate the fragmentation effect of the road on habitats and wildlife movements, especially for small terrestrial organisms. The Yosemite Creek Bridge, Yosemite Creek Pedestrian/Bicycle Bridge, and Yosemite Creek diversion dam would continue to affect stream dynamics and associated aquatic and riparian habitats along Yosemite Creek and downstream along the Merced River. Deposition and scouring rates would continue to be altered, affecting streamside succession of wildlife habitats and the abundance and diversity of birds, amphibians, and other wildlife found in these habitats.

Under Alternative 1, the proposed Indian Cultural Center site would remain a previously disturbed but currently undeveloped site. Though undeveloped, the site would continue to be adversely affected by pedestrian traffic and other human disturbances.

Impact Significance. Local, long-term, moderate, adverse impact.

Summary of Alternative 1 Impacts. Continued use of the project area would result in a local, long-term, moderate, adverse impact on wildlife due to habitat fragmentation as a result of buildings, roads, parking lots, and other development; vehicle and pedestrian noise; human presence; and other use-associated effects.

Cumulative Impacts

Natural wildlife habitats have been manipulated almost since the inception of Yosemite National Park. Historic logging, fire suppression, rangeland clearing, grazing, mining, draining, damming, and diversions and the introduction of non-native species and recreational features and use have adversely affected wildlife.

Cumulative impacts to wildlife are based on analysis of past, present, and reasonably foreseeable future actions in the Valley, in combination with potential effects of Alternative 1. The projects identified below include only those projects that could affect wildlife within the Valley.

Implementation of the *Yosemite Valley Plan*, Merced River Plan, and the Fire Management Plan Update as well as other project-level restoration efforts would have a net beneficial cumulative effect on wildlife through upland, riparian, and wetland habitat restoration and revegetation and other improvements to the general health of ecosystems. Implementation of the *Yosemite Valley Plan* would restore 140 acres of degraded areas and result in a net decrease in development within Yosemite Valley. The Merced River Plan includes measures to restore degraded areas of the Merced River corridor, resulting in beneficial impacts to riparian and wetland habitat and wildlife that use these areas. The Fire Management Plan Update calls for the use of fire management practices to restore natural resource areas, which would have beneficial wildlife impacts.

Reasonably foreseeable projects that could have an adverse effect on wildlife in Yosemite Valley include development-related projects (e.g., construction at Curry Village). The local, long-term, adverse effects of these projects would occur if new structures and/or infrastructure displaced wildlife or their habitats within Yosemite Valley. Additional Curry Village lodging and housing could increase the development density in this area of the Valley. In addition, construction-related activities associated with other implementation projects identified in the *Yosemite Valley Plan* as well as the *East Yosemite Valley Utilities Improvement Plan* would have short- and long-term but temporary, adverse impacts to Valley wildlife through increased human presence and construction noise.

Overall, the cumulative projects would have a regional, long-term, moderate, beneficial effect on wildlife. The beneficial effects of the restoration efforts in Yosemite Valley would offset the adverse effects associated with development projects and construction activities.

Alternative 1 and the cumulative projects in Yosemite Valley would result in a regional, long-term, moderate, beneficial impact on wildlife, due to the overall emphasis on restoring disturbed or developed land to natural conditions and improving the health of ecosystems. These beneficial effects would outweigh the moderate adverse effect associated with Alternative 1 and the adverse effects of cumulative development projects and construction activities.

Impairment

Alternative 1 would result in a local, long-term, moderate, adverse impact to wildlife at the Yosemite Lodge Area Redevelopment site due to habitat fragmentation, noise, human presence, and other use-associated effects. The adverse effect of this alternative on wildlife would be primarily localized and would not be considered severe. The local adverse impact to wildlife would not be of sufficient magnitude or nature to impair the integrity of wildlife resources in the park for future generations.

Special-status Species

Analysis

Special-status species known to occur or with potential to occur in the immediate vicinity of the Yosemite Lodge Area Redevelopment site include bald eagle, Yosemite Mariposa sideband snail, Sierra pygmy grasshopper, Harlequin duck, peregrine falcon, white-headed woodpecker, rufous hummingbird, California spotted owl, golden eagle, Cooper's hawk, sharp-shinned hawk, willow flycatcher, yellow warbler, 10 species of bats, and 8 special-status plant species (refer to Chapter III, Affected Environment, and Appendix D, Special-status Species Evaluation, for additional information).

Under Alternative 1, operations and use of the Yosemite Lodge area, Camp 4, Northside Drive, proposed Indian Cultural Center site, Yosemite Creek Bridge, Yosemite Creek Pedestrian/Bicycle Bridge, and Yosemite Creek diversion dam would remain similar to existing conditions. As identified in the *Final Yosemite Valley Plan/SEIS*, Alternative 1 would have a long-term adverse effect on special-status species.

Operation-related Effects on Special-status Species of Birds. Disturbance at nest sites by rock climbers and low-flying aircraft above Camp 4, and human effects that have changed the natural diversity and abundance of foraging habitat in the Valley would continue to adversely affect peregrine falcons. Habitat fragmentation caused by development and roads throughout the project site and degradation and reduction of meadow and riparian habitats along the Merced River and Yosemite Creek would continue to adversely affect bald eagle, Harlequin duck, white-headed woodpecker, rufous hummingbird, California spotted owl, golden eagle, Cooper's hawk, sharp-shinned hawk, willow flycatcher, and yellow warbler. Adverse effects on special-status species also include disruption of nesting and feeding due to the presence of humans and noise. Under Alternative 1, there would be no new or additional impacts to special-status species of birds. No restoration of riparian and meadow habitat would occur under Alternative 1, although habitat surrounding abandoned Yosemite Lodge units within the 100-year floodplain would continue to receive greater wildlife use as it recovers, potentially attracting yellow warbler, willow flycatcher, Harlequin duck, and other bird species that utilize riparian habitats.

Impact Significance. Local, long-term, moderate, adverse impact.

Operation-related Effects on Special-status Species of Bats. Existing activities and uses under Alternative 1 have likely affected the quality of bat habitat within the project site. Habitat fragmentation and degradation caused by development at the Yosemite Lodge area, Camp 4, Northside Drive, Yosemite Creek Bridge, Yosemite Creek Pedestrian/Bicycle Bridge, and Yosemite Creek diversion dam, in addition to historic fire suppression throughout the Valley have reduced foraging and roosting habitat for bats. In addition, degradation and reduction of meadow and riparian habitats along the Merced River and Yosemite Creek as well as hazard tree management in the Yosemite Lodge area, at Camp 4, and along Northside Drive and other roadways have adversely affected these species and their habitats. Under Alternative 1, there would be no new or additional impacts to special-status species of bats. No restoration of riparian and meadow habitat would occur under Alternative 1, although habitat surrounding abandoned Yosemite Lodge units within the 100-year floodplain would continue to receive greater wildlife use as it recovers, potentially attracting spotted bat, long-legged myotis bat, greater western mastiff bat, and other bat species that utilize these habitats for foraging. In addition, pallid bat,

Townsend's big-eared bat, and other bat species could use the abandoned cabins at Yosemite Lodge for roosting.

Impact Significance. Local, long-term, moderate, adverse impact.

Operation-related Effects on Yosemite Mariposa Sideband Snail. Human disturbance and foot traffic through rockslide habitat at the proposed Indian Cultural Center site and above Camp 4 could result in adverse impacts to this species due to trampling and habitat disturbance. Under Alternative 1, existing impacts to this species would continue, and there would be no new or additional impacts on the Yosemite Mariposa sideband snail.

Impact Significance. Local, long-term, negligible to minor, adverse impact.

Operation-related Effects on Sierra Pygmy Grasshopper. The Sierra pygmy grasshopper is thought to be associated with riparian and meadow habitats (Arnold 2003). Existing disturbance of riparian habitat along the Merced River and Yosemite Creek due to roads, housing, utilities, and the presence of humans at the Yosemite Lodge area has likely reduced the extent and quality of suitable habitat for this species and would continue to do so in the future. Under Alternative 1, there would be no new or additional impacts on the Sierra pygmy grasshopper. No restoration of riparian and meadow habitat would occur under Alternative 1.

Impact Significance. Local, long-term, minor, adverse impact.

Operation-related Effects on Special-status Plants. Special-status plant species known or likely to occur in the vicinity of the project site include Rawson's flaming-trumpet, Madera linanthus, slender-stalked monkeyflower, Yosemite popcorn-flower, sugar stick, northern bedstraw, false pimpernel, and ladies' tresses. Human disturbance and foot traffic throughout black oak woodland and upland habitats within the project site and riparian and meadow habitats along the Merced River and Yosemite Creek could result in adverse impacts to these species, if present. In addition, fill material, infrastructure, and buildings at Yosemite Lodge occupying areas that in the past were naturally complex riparian habitat could prevent revegetation of these areas by special-status plant species. Under Alternative 1, there would be no new or additional impacts to special-status plants.

Impact Significance. Local, long-term, moderate, adverse impact.

Summary of Alternative 1 Impacts. Continued use of the Yosemite Lodge area, Camp 4, Northside Drive, Yosemite Creek Bridge, proposed Indian Cultural Center site, Yosemite Creek Pedestrian/ Bicycle Bridge, and the Yosemite Creek diversion dam would result in a local, long-term, moderate, adverse impact on special-status species. Though unused developed areas within the Yosemite Lodge area would provide somewhat undisturbed habitat for special-status species, overall human use of the Yosemite Lodge area is very high. Continued use of the Yosemite Lodge Area Redevelopment site and associated habitat fragmentation would have a local, long-term, moderate, adverse impact on special-status species.

Cumulative Impacts

Natural wildlife habitats have been manipulated almost since the inception of the park. Historic logging, fire suppression, rangeland clearing, grazing, mining, draining, damming, and diversions and the introduction of non-native species and recreational features and use have affected special-status species.

Cumulative impacts to special-status species are based on analysis of past, present, and reasonably foreseeable future actions in the Valley, in combination with potential effects of this alternative. The projects identified below include only those projects that could affect special-status species within the Valley.

Upland, riparian, and wetland habitat restoration and revegetation and other improvements to the general health of ecosystems would benefit special-status species. Implementation of the *Yosemite Valley Plan* would restore 140 acres of degraded areas and result in a net decrease in development within Yosemite Valley. The Merced River Plan and the Ecological Restoration at Eagle Creek include measures to restore degraded areas of the Merced River corridor, resulting in beneficial impacts to riparian and wetland habitat and special-status species that utilize these areas. The Fire Management Plan Update calls for the use of fire management practices to restore natural fire processes, which would have beneficial impacts to special-status species.

Reasonably foreseeable projects that could have an adverse effect on special-status species in Yosemite Valley include development-related projects (e.g., construction at Lower Yosemite Fall and Curry Village). The placement of new structures and/or infrastructure could displace special-status species and fragment their habitats within Yosemite Valley, resulting in a local, long-term, adverse effect on these species. Additionally, Curry Village lodging and housing could increase the development density in this area of the Valley. Construction-related activities associated with projects identified in the *Yosemite Valley Plan* as well as the *East Yosemite Valley Utilities Improvement Plan* would have short- and long-term but temporary, adverse impacts to Valley special-status species through increased human presence and construction noise (e.g., disturbance of bats and breeding birds). Overall, the cumulative projects would have a regional, long-term, moderate, beneficial effect. The beneficial effects associated with restoration efforts in Yosemite Valley would offset the adverse construction- and development-related impacts.

Alternative 1 and the cumulative projects in Yosemite Valley would result in a regional, long-term, minor to moderate, beneficial impact on special-status species through re-establishment of the natural hydrology and fire regime of the Valley and restoration of disturbed and developed land to natural conditions. These beneficial effects would outweigh the moderate adverse effect associated with Alternative 1 and the adverse effects of cumulative development projects and construction activities.

Impairment

Alternative 1 would result in a local, long-term, moderate, adverse impact to special-status species at the Yosemite Lodge Area Redevelopment site. The adverse effect of this alternative on special-status species would be localized and would not be considered severe. The adverse impacts on local special-status species at the site would result from continued habitat fragmentation, noise, human presence, and other use-associated effects. The local adverse impacts to special-status species would not be of sufficient magnitude or nature to impair the integrity of special-status species. Therefore, Alternative 1 would not impair special-status species for future generations.

Air Quality

Analysis

Nonvehicle Operational Emissions. Under Alternative 1, emission sources associated with fuel combustion at Yosemite Lodge and Camp 4 would continue to generate air pollutants. Wood burning in the 38 campfire rings at Camp 4, as well as the fireplaces in the registration building, the Mountain Room Restaurant, and the Mountain Room Bar, would continue to generate reactive organic gasses and other pollutants. Because visitors at Yosemite Lodge and Camp 4 stay only for limited periods, the adverse health effect of wood-burning emissions would be considered negligible. Some air pollutant emissions would also be generated from cooking and from the burning of propane for space and water heating for the 245 units at Yosemite Lodge, but visitors would not be exposed to harmful levels of these emissions.

The total nonvehicle emissions associated with Alternative 1 would not change compared to existing conditions. Overall, the continued effect of emissions associated with Yosemite Lodge and Camp 4 would be inconsequential relative to emissions generated by other stationary sources in the park and the region.

Impact Significance. Local, long-term, negligible, adverse impact.

Vehicle Operational Emissions. Vehicle trips associated with the operation of Yosemite Lodge and Camp 4 under Alternative 1 (both trips to and from the Valley and intra-Valley trips) result in emissions of various air pollutants (primarily carbon monoxide, nitrogen oxides, respirable particulate matter, diesel particulate, and hydrocarbons). Trips to and from the Valley include travel by overnight visitors between Yosemite Valley and outlying areas, supply trips by delivery trucks to Lodge facilities, and commute trips by staff that work at the Lodge and live outside the Valley.

The concentration of emissions generated by intra-Valley trips, however, depends greatly on the efficiency of the local circulation system with regard to traffic flow as well as the number of intra-Valley trips that occur. Under Alternative 1, relatively high vehicle emissions are generated along the segment of Northside Drive at the east end of the Lodge where traffic flow is poor (at traffic level of service F). Cars and buses idling along this segment generate relatively higher concentrations of emissions than if they were traveling at speeds of 25 miles per hour (and had shorter trip times). Similarly, parking conditions at Yosemite Lodge would continue to be congested, because parking spaces line the Lodge entry roadway and wayfinding for park visitors is relatively difficult. In addition, particulate matter emissions would continue to be generated from vehicles at the Camp 4 parking lot, which is unpaved. The amount of re-entrained dust at the Camp 4 parking lot would continue to be high relative to other paved parking surfaces in the Valley. The overall effect of tailpipe emissions and re-entrained dust at the project site would be negligible, because these concentrations would not result in adverse health impacts to visitors.

Moreover, the number of intra-Valley trips is partly related to the availability of and ease of access to alternative transportation modes (e.g., walking, bicycling, and shuttle buses). The present design of the Yosemite Lodge Area Redevelopment site is not fully conducive to pedestrians, bicyclists, and shuttle buses. Under Alternative 1, site trails would continue to be uncoordinated and have inadequate directional signage. Pedestrian and bicycle crossings between Yosemite Lodge and Yosemite Falls would continue to be hazardous and to interrupt the flow of traffic along Northside Drive in the vicinity of the Lodge. Visitors, therefore, may be more likely to rely

on their private vehicles for intra-Valley transportation, thereby contributing to traffic congestion in Yosemite Valley and generating more emissions.

The total number of vehicle trips and the types of pollutants associated with Alternative 1 would not change compared to existing conditions. Although vehicle emissions would be expected to decrease in the long term as newer and cleaner vehicles replace older ones, traffic congestion along Northside Drive and in the Yosemite Lodge circulation system would continue, and the Camp 4 parking lot would remain unpaved.

Impact Significance. Local, long-term, negligible, adverse impact.

Summary of Alternative 1 Impacts. Continued wood burning and traffic congestion along Northside Drive and in the local circulation system under Alternative 1 would result in a local, long-term, negligible, adverse impact to air quality in the vicinity of the Yosemite Lodge Area Redevelopment site.

Cumulative Impacts

Cumulative effects on air quality discussed herein are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region, in combination with potential effects of this alternative. The projects identified below are examples of projects that could affect air quality within Yosemite National Park.

Since 1950, the population of California has tripled, and the rate of increase in vehicle-miles-traveled has increased six-fold. Air quality conditions within the park have been influenced by this surge in population growth and associated emissions from industrial, commercial, and vehicular sources in upwind areas. Since the 1970s, emissions sources operating within the park, as well as California as a whole, have been subject to local stationary-source controls and state and federal mobile-source controls. With the passage of time, such controls have been applied to an increasing number of sources, and the associated requirements have become dramatically more stringent and complex. In the 1980s, a Restricted Access Plan was developed for use when traffic and parking conditions in Yosemite Valley are overcongested. The plan has the effect of reducing the number of incoming vehicles and their related emissions until the traffic volume and parking demand in Yosemite Valley decrease sufficiently (as visitors leave the Valley) to stabilize traffic conditions. Implementation of the Yosemite Area Regional Transportation System and the Yosemite Valley Shuttle Bus Stop Improvements also has the effect of reducing regional vehicle trips and associated air emissions.

The *Yosemite Valley Plan* proposes to enhance the quality of the visitor experience in Yosemite Valley by reducing automobile congestion and limiting crowding. It also proposes traffic management systems and options for the size and placement of parking lots, both within and outside of Yosemite Valley. Parking lots outside the Valley could be used to intercept day visitors and shift those visitors to Valley-bound shuttle buses. Although the *Yosemite Valley Plan* would have a moderate adverse impact on air quality due to nitrogen oxide emissions from diesel buses through 2015, it would have a long-term, minor to moderate, beneficial impact with respect to emissions of volatile organic compounds, carbon monoxide, and particulate matter (NPS 2000a).

Short-term adverse impacts on air quality could result from many of the reasonably foreseeable projects planned or approved within the park, such as the *East Yosemite Valley Utilities Improvement Plan*, the Lower Yosemite Fall Project, Yosemite Valley Shuttle Bus Stop

Improvements, the Rehabilitation of Ansel Adams Gallery Buildings, Curry Village and East Yosemite Valley Campgrounds Improvement Project, Curry Village Employee Housing, and the El Portal Road Improvement Project. The adverse effects of these projects would be localized and short term in nature, and primarily related to emissions from the operation of construction equipment and construction-generated traffic on roadways serving the project sites. The intensity of the adverse effects from construction-related emissions would be minor, based on the types and quantity of construction equipment used and the intensity of truck trips generated along park roads from simultaneously occurring construction projects. Emissions associated with these projects would be detectable in close proximity to the construction activity, but would not result in adverse health effects to people nearby.

Although cumulative growth in the region would tend to adversely affect air quality, implementation of ongoing state and federal mobile-source control programs will ameliorate this effect to some degree. With respect to particulate matter, conditions in Yosemite Valley would be affected by both regional sources and local sources and could be beneficial or adverse, because the level of particulate matter resulting from regional sources changes frequently. Although the regional air quality influences may be adverse, the cumulative projects overall would have a regional, long-term, minor, beneficial effect on ambient air quality due to improvements in traffic management and reductions in automobile congestion resulting from implementation of the *Yosemite Valley Plan*.

With regard to air quality in the vicinity of the Yosemite Lodge Area Redevelopment site, nonvehicle and vehicle emissions associated with the operation of Camp 4 and Yosemite Lodge under Alternative 1 would not substantially alter the intensity of this minor beneficial impact at the regional and local level.

Impairment

Implementation of Alternative 1 is expected to result in a local, long-term, negligible, adverse impact to air quality due to continued wood burning and to traffic congestion along Northside Drive and in the local circulation system. These impacts would not be of sufficient magnitude to impair park resources for future generations.

Noise

Analysis

Nonvehicle Operational Noise. Operation of Yosemite Lodge and Camp 4 under Alternative 1 would not increase noise levels or generate any new sources of nonvehicle noise. Therefore, Alternative 1 would not result in nonvehicle noise effects. Under Alternative 1, noise generated by campers at Camp 4 would continue to predominately affect other campers, as opposed to guests staying at the Lodge or day visitors at nearby recreational areas. In addition, evening events at the Lodge amphitheater would not adversely affect interior noise levels at Lodge units, because the amphitheater would continue to be adequately shielded by surrounding structures, including the food and beverage building, the bar/retail building, and the registration building. Similarly, there would be no change in the ambient noise environment with regard to sound levels generated by day visitors and overnight guests engaged in outdoor recreational activities (e.g., conversation, car doors, and delivery truck doors).

Impact Significance. No effect.

Vehicle Operational Noise. Under Alternative 1, vehicle noise would remain the predominant noise source along Northside Drive and would continue to affect the noise environment at Camp 4. The intensity of the impact at Camp 4 would be negligible, because traffic noise would not increase ambient noise levels perceptibly. Although traffic noise would be perceptible to campers at Camp 4, it would not cause sleep disturbance or interfere with normal campsite activities. The continuation of adverse noise impacts would be negligible and adverse.

Impact Significance. Local, long-term, negligible, adverse impact.

Summary of Alternative 1 Impacts. Alternative 1 would result in a local, long-term, negligible, adverse impact to the noise environment at Camp 4, due to noise generated by traffic on Northside Drive.

Cumulative Impacts

Cumulative effects to the ambient noise environment discussed herein are based on the analysis of past, present, and reasonably foreseeable future actions in Yosemite National Park, in combination with potential effects of this alternative. The projects identified below are examples of projects that could affect the noise environment in combination with the alternatives.

The *Yosemite Valley Plan* proposes to enhance the quality of the visitor experience in Yosemite Valley by reducing automobile congestion, limiting crowding, and expanding orientation and interpretation services. It also proposes traffic management systems and options for the sizing and placement of parking lots, both within and outside of Yosemite Valley. Parking lots outside the Valley could be used to intercept day visitors and shift those visitors to Valley-bound shuttle buses. Implementation of the Yosemite Area Regional Transportation System and Yosemite Valley Shuttle Bus Stop Improvements also has the effect of reducing regional vehicle trips. Overall, sound levels associated with traffic along most regional roadways would be reduced, representing a local, long-term, moderate, beneficial impact on the noise environment.

Short- and long-term but temporary, adverse impacts on ambient noise levels could result from construction activities associated with some of the reasonably foreseeable projects planned or approved within the park, such as the Lower Yosemite Fall Project, the Ansel Adams Gallery Buildings Rehabilitation, Curry Village and East Yosemite Valley Campgrounds Improvement Project, and Curry Village Employee Housing. The adverse effects from construction of these projects would be localized in nature and primarily related to construction-generated traffic on roadways serving the project sites in Yosemite Valley. Noise generated by the construction of cumulative projects would result in a local, major, adverse impact to the ambient noise environment. The *Final Yosemite Valley Plan/SEIS* analyzed and disclosed the major adverse noise impacts associated with construction activity.

The cumulative project construction activity would have a long-term but temporary, substantial adverse effect on the noise environment of Yosemite Valley. Overall, however, the permanent beneficial effects of the cumulative projects associated with reduced regional vehicle trips and related vehicle noise would result in a regional, long-term, minor, beneficial effect on the noise environment. Implementation of Alternative 1 would not increase or reduce noise levels or generate any new sources of noise and therefore would not contribute to this cumulative impact.

Impairment

Impairment is not addressed in the noise analysis, because this resource topic is peripheral to the protection of the park for future generations.

Cultural Resources

Archeological Resources

Analysis

Operation-related Effects on Archeological Resources. Under Alternative 1, no specific actions would be taken to change existing conditions. Minor degradation of the five documented archeological sites within the Yosemite Lodge Area Redevelopment would continue due to visitor use, routine park maintenance, and natural processes. Potential impacts include removal of archeological deposits, loss of information, and changes in the site setting. Under this alternative, no effect is anticipated at CA-MRP-305/H, as the existing setting would not change.

Under this alternative, archeological resources could be subject to potential damage from ongoing maintenance, minor grading and removal of archeological deposits, vandalism, visitor access, and natural processes for resources located in developed areas. Ongoing operations and planning actions undertaken in the project area are designed to minimize impacts to archeological sites. Avoidance of archeological sites is the preferred management strategy. Planning actions under Alternative 1 would be performed in accordance with stipulations in the park's 1999 Programmatic Agreement among the National Park Service, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation regarding planning, design, construction, operations, and maintenance of Yosemite National Park (NPS 1999c), thus reducing impacts from minor to negligible.

Impact Significance. Local, permanent, negligible, adverse impact.

Summary of Alternative 1 Impacts. Alternative 1 would not alter the treatment of archeological resources from their present condition. Potential alteration of an archeological resource would result in a local, long-term, negligible, adverse impact associated with potential damage due to ongoing maintenance, grading and removal of archeological deposits, vandalism, visitor access, and natural processes. Any site-specific planning would be performed in accordance with stipulations in the park's 1999 Programmatic Agreement.

Cumulative Impacts

Cumulative impacts to archeological resources discussed herein are based on analysis of past, present, and reasonably foreseeable future actions in Yosemite Valley, in combination with potential effects of this alternative. In general, the archeological resources of the park are the result of thousands of years of human occupation. Archeological resources have been affected by past actions in the park since its inception. These resources could be subject to damage from ongoing maintenance, new construction, demolition, rehabilitation of existing facilities and utility corridors, vandalism, visitor access, and natural processes. These occurrences could damage the record of past behavior and compromise the site context.

Reasonably foreseeable future actions proposed in the region that could affect cultural resources include the *East Yosemite Valley Utilities Improvement Plan* and construction of elements addressed in the *Yosemite Valley Plan* (e.g., Curry Village and East Yosemite Valley Campgrounds

Improvement Project, Curry Village Employee Housing, and the Lower Yosemite Fall Project). Several archeological sites would be disturbed or lost, resulting in long-term adverse effects to cultural resources. However, the affected resources would be documented in accordance with the Programmatic Agreement, creating permanent records of individual cultural resources. Specific impacts would depend upon the nature, location, and design of ground-disturbing actions, as well as the quantity and data potential of the archeological resource(s) affected.

The cumulative projects would have a regional, permanent, minor, adverse impact associated with potential disturbance of individual archeological resources. Alternative 1 would contribute to this effect on a local level due to potential alteration of an archeological resource associated with ongoing maintenance, grading and removal of archeological deposits, vandalism, visitor access, and natural processes.

Impairment

Alternative 1 would have a local, permanent, negligible, adverse impact on archeological resources. Although archeological resources are a key park resource, the effect of this alternative on such resources would be primarily localized, and the effect would not be considered severe. The extent and quality of archeological resources throughout the area would remain unaffected. Therefore, Alternative 1 would not impair archeological resources or values for future generations.

American Indian Traditional Resources

Analysis

Operation-related Effects on Traditional Resources. Alternative 1 would not alter the management or treatment of American Indian traditional resources in the project area. Previous development of facilities within the project area has disturbed two historic villages and compromised the integrity of several collecting areas. The National Park Service would continue to consult with American Indian groups regarding the use and potential impacts of site-specific designs on American Indian traditional resources.

Impact Significance. No effect.

Summary of Alternative 1 Impacts. Alternative 1 would not alter the management or treatment of American Indian traditional resources in the project area.

Cumulative Impacts

Cumulative impacts to American Indian traditional resources reflect the analysis of past, present, and reasonably foreseeable future actions in Yosemite Valley, in combination with potential effects of this alternative. American Indian traditional resources and their traditional cultural associations have been lost or damaged in the project area through past development, visitor use, natural events, and widespread disruption of cultural traditions. Nevertheless, Yosemite National Park retains many sites and resources of significance to local and culturally associated American Indians.

In general, American Indian traditional resources within Yosemite Valley are the result of thousands of years of human occupation. Reasonably foreseeable future actions proposed in the region that could affect these resources include damage from ongoing maintenance, construction

of new facilities, development, vandalism, visitor access, and natural processes. In Yosemite Valley, proposed actions identified in the *Yosemite Valley Plan* could disturb or destroy parts of up to 11 traditional gathering areas; add or expand modern development at 10 historic village areas; and add development in at least one area figuring in oral traditions. However, facilities removal and ecological restoration would benefit up to five traditional gathering areas by enhancing conditions for plant resources, and would remove modern development from two historic village areas. In general, actions in Yosemite Valley would have a long-term, minor, adverse impact to the Valleywide American Indian traditional landscape.

Site-specific planning and compliance actions associated with these projects would be performed in accordance with Stipulation V in the park's 1999 Programmatic Agreement and the 1997 agreement between the National Park Service and the American Indian Council of Mariposa County. Specific impacts would depend upon the nature, location, and design of the facility to be developed or removed, as well as the quantity and data potential of the traditional resource(s) affected.

Disturbance of American Indian traditional resources as a result of the cumulative projects would be considered a regional, long-term, minor, adverse impact associated with potential disturbance of traditional gathering areas or historic village areas. Alternative 1 would not contribute to this effect.

Impairment

Alternative 1 would not change the treatment and management of traditional cultural properties. Therefore, Alternative 1 would not impair American Indian traditional resources or values for future generations.

Cultural Landscape Resources, including Historic Sites and Structures

Analysis

Operation-related Effects on Cultural Landscape Resources. Alternative 1 would not alter management or treatment of cultural landscape resources within the existing facilities areas. Under the terms of the 1999 Programmatic Agreement, undertakings required for maintenance of the facilities are considered Repetitive Low Impact Activities and are exempt from further review or consultation. Under Alternative 1, no change to these features is anticipated, other than regular maintenance.

Impact Significance. No effect.

Summary of Alternative 1 Impacts. Alternative 1 would not alter the management or treatment of cultural landscape resources, including the Yosemite Falls Trail, the Valley Loop Trail, and Camp 4 in the project area.

Cumulative Impacts

Cumulative impacts to cultural landscape resources reflect the analysis of past, present, and reasonably foreseeable future actions in the Yosemite Valley, in combination with potential effects of this alternative. Cultural landscape resources have been lost or damaged through past development, visitor use, and natural events.

Reasonably foreseeable future actions proposed in the region that could affect cultural landscape resources include damage from ongoing maintenance, development, vandalism, visitor access, and natural processes. Implementation of elements of the *Yosemite Valley Plan* would result in the loss of individually significant historic structures, and historic structures that contribute to the significance of the Valleywide cultural landscape, resulting in permanent, major, adverse impacts. Implementation of standard mitigation measures (e.g., Historic American Buildings Survey/ Historic American Engineering Record documentation, recordation and salvage of historic materials) under the Programmatic Agreement would reduce the intensity of adverse impacts. In addition, in cases where historic structures would be removed, the National Park Service would first consider relocation and adaptive reuse in another location within the park.

For some cumulative projects, the impacts on historic properties would not be known until further site-specific historic resource studies have been undertaken, and project designs have been more fully developed. In these instances, the park would carry out any necessary inventories and evaluations of National Register of Historic Places significance; consultation with the State Historic Preservation Officer and culturally associated American Indian tribes and the public; and treatment/mitigation as stipulated in the Programmatic Agreement prior to any construction disturbance.

As analyzed and disclosed in the *Yosemite Valley Plan*, disturbance of cultural landscape resources associated with the cumulative projects would be a long-term, minor to major, adverse impact, depending upon the nature, location, and design of the facility to be developed or removed, as well as the quantity and data potential of the individual resources or landscape affected. Alternative 1 would not contribute to this effect.

Impairment

Alternative 1 would not change the treatment and management of cultural landscape resources. Therefore, Alternative 1 would not impair park resources or values for future generations.

Section 106 Summary for Alternative 1. For purposes of assessing effects to historic properties under the National Historic Preservation Act and implementing regulations (36 Code of Federal Regulations 800), the effects are considered either adverse or not adverse, or there is no effect. Five archeological sites, five American Indian Traditional resources (two villages, three gathering areas) and three cultural landscape resources (two trails and one campsite) are located in the project area. While every effort is made to avoid or minimize impacts to cultural resources during facilities maintenance, archeological deposits could be affected if subsurface disturbance is required. If historic resources (i.e., archeological sites) could not be avoided, monitoring and data recovery carried out in accordance with the 1999 Programmatic Agreement would retrieve important information from the resources.. The continuation of current operations in the project area has the potential to adversely affect historic properties (archeological resources). Under the regulations of the Advisory Council on Historic Preservation (36 Code of Federal Regulations 800.5) addressing the criteria of effect and adverse effect, the National Park Service finds that the continuation of repairs and ongoing maintenance of existing facilities would have the potential to adversely affect historic properties. In accordance with National Park Service policies and procedures, the park would continue to protect cultural resources to the greatest extent allowable under present funding and staffing levels. Disturbance of identified historic properties resources would be avoided wherever possible, but in instances where avoidance or

preservation could not be achieved, appropriate mitigation would be carried out under provisions of the 1999 Programmatic Agreement.

Social Resources

Scenic Resources

Analysis

Operation-related Effects on Scenic Resources. As identified in the *Final Yosemite Valley Plan/SEIS*, Yosemite Lodge would continue to be a visual intrusion from important Yosemite Valley vantage points, including Upper Yosemite Fall and Columbia Point.

Nearly 100 years of fire suppression has resulted in a visual change from open forests to dense thickets of shade-tolerant tree species in many areas of Yosemite Valley, including the Yosemite Lodge Area Redevelopment site. Under Alternative 1, there would be continued adverse impacts associated with impaired views from the project site of waterfalls, rock cliffs, and meadows, due to a dense tree cover of incense-cedars. Tree cover at the Lodge site, however, screens medium- and long-range views of developed features at Yosemite Lodge from such vantage points as the Merced River and Yosemite Chapel (see item #18 on figure III-2).

The design of the Lodge site would continue to have perceptible adverse effects on scenic resources and views of scenic resources. Views of Yosemite Valley features would continue to be compromised, based upon the layout of the Lodge site. Key Lodge buildings and common gathering areas, such as the registration building and the amphitheater, would continue to be situated so as to obstruct views of Valley features, such as Yosemite Falls or Sentinel Rock. Pedestrian and bicycle route design would continue to not take advantage of key views. For example, many Lodge visitors photograph Yosemite Falls from the middle of the main Lodge roadway, resulting in pedestrian and vehicle conflicts. Lodging units would continue to not be sited to take advantage of Valley visual features, and lodging unit design (e.g., unit entry and exit, availability of patios or terraces, etc.) would continue to not encourage Lodge guests to experience the out-of-doors. In many areas of the site, guests have views of parking lots immediately adjacent to guest rooms. In addition, parking lots line the roadway that provides access to the Lodge site, becoming part of the visual experience for visitors to the area. Lodging unit buildings would continue to appear dated and somewhat rundown, and temporary modular units (e.g., employee housing and the Wellness Center) would continue to detract from the visual setting of the Lodge.

Northside Drive and traffic along the roadway would continue to visually bisect the Yosemite Lodge Area Redevelopment site, resulting in visual intrusions in the landscape. Similarly, Northside Drive would continue to visually separate Yosemite Lodge and Yosemite Falls, which are two popular visitor destinations in Yosemite Valley.

The proposed Indian Cultural Center and Camp 4 expansion areas would continue to be predominantly characterized by natural vegetative features, with no development in these areas. Short-range views at Camp 4 would continue to be adversely affected by degraded surface conditions at the campground, due to limited ground cover and bare compacted soil. In addition, the industrial-appearing electrical substation at Camp 4 would continue to be out of character with this area of Yosemite Valley.

Impact Significance. Local, long-term, moderate, adverse impact.

Summary of Alternative 1 Impacts. Alternative 1 would continue to have readily apparent adverse impacts on the local scenic resources of the Yosemite Lodge Area Redevelopment site. Yosemite Lodge would be a visual intrusion from two important vantage points in Yosemite Valley; fire suppression activities resulting in dense forest stands would continue to block key views from the project area; and design of Lodge, Northside Drive, and Camp 4 areas would continue to detract from scenic resources and views of scenic resources, resulting an a local, long-term, moderate, adverse impact.

Cumulative Impacts

Cumulative impacts to scenic resources are based on analysis of past, present, and reasonably foreseeable future actions in Yosemite Valley, in combination with potential effects of this alternative. The projects identified below include only those projects that could affect scenic resources within the Valley.

Scenic resources have been affected by numerous past actions. Primary among these is the alteration of natural communities by Euro-American settlers. For example, agricultural activities and the development of tourism resulted in the drying out of the Valley by breaching the moraine and controlling naturally occurring fires, which affected vegetation patterns. Broadleaf trees along the riverbanks were replaced by the comparatively dense stands of conifers that exist today. These events have resulted in a local, long-term, adverse effect on scenic resources, as the conifers now block views of important scenic resources that were visible before the vegetation patterns were changed.

Actions that could have a net beneficial cumulative effect on scenic resources include those that improve the general health of ecosystems (e.g., Eagle Creek Merced River Ecological Restoration and implementation of the *Yosemite Valley Plan*, Merced River Plan, and the Fire Management Plan Update). Implementation of the *Yosemite Valley Plan* would restore 140 acres of degraded areas and result in a net decrease in development within Yosemite Valley. The Merced River Plan prescribes the restoration of degraded areas of the Merced River corridor, resulting in beneficial impacts on scenic resources. The Fire Management Plan Update calls for the use of fire management practices to restore natural resource areas and maintain open vistas, which would have beneficial scenic resources impacts. Past projects such as the Lower Yosemite Fall Project have rehabilitated and restored areas of Yosemite Valley and opened historic view corridors to key scenic vistas.

Reasonably foreseeable projects that could have an adverse effect on scenic resources include development-related projects (e.g., construction at Yosemite Village and Curry Village). The local, long-term, adverse effects of these projects would occur if new structures and/or infrastructure intruded into views of important scenic resources within Yosemite Valley. For example, the construction of Curry Village lodging and housing could increase the development density in this area of the Valley, reduce vegetative screening, and be visible from prominent Valley vantage points. In addition, construction-related activities associated with implementing projects identified in the *Yosemite Valley Plan* as well as the *East Yosemite Valley Utilities Improvement Plan* would have short- and long-term but temporary, adverse impacts to Valley scenic resources associated with views of construction fencing, staging areas, and development and restoration activities (e.g., grading, paving, trenching, and construction).

The cumulative projects in Yosemite Valley would result in a regional, long-term, moderate, beneficial cumulative impact on scenic resources because of the overall emphasis of these projects on restoring disturbed or developed land to natural conditions and improving the health of ecosystems.

The beneficial effects of restoring disturbed or developed land to natural conditions and improving the health of ecosystems would outweigh the local, moderate, adverse effect associated with Alternative 1 and the adverse effects of cumulative development projects and construction activities. Therefore, Alternative 1 and the cumulative projects in Yosemite Valley would result in a regional, long-term, moderate, beneficial impact on scenic resources.

Impairment

Alternative 1 would result in a local, long-term, moderate, adverse impact to scenic resources at the Yosemite Lodge Area Redevelopment site. Although the project area is an important part of the scenery of Yosemite Valley, the adverse effect of this alternative on scenic resources would be localized and would not be considered severe. Rather, the adverse impacts on the local scenic resources of the project site would result from the continued blockage of key views from the project area due to dense forest stands, and from site and architectural designs that detract from scenic resources or views of scenic resources. The local adverse impacts to visual resources would not be of sufficient magnitude or nature to impair the integrity of scenic resources that are necessary to fulfill specific purposes identified in the park's establishing legislation, key to opportunities for enjoyment of the park, or identified as a goal in the park's General Management Plan or other relevant planning documents. Therefore, Alternative 1 would not impair scenic resources for future generations.

Visitor Experience

Analysis

Operation-related Recreation Effects. Under Alternative 1, recreational use of the project area would not be affected. Camp 4 would remain a walk-in campground with 37 campsites and would continue to serve as an unofficial climbers' camp. Sightseeing in the project area from the Lodge grounds, Camp 4, and Northside Drive would continue, including observation of Yosemite Falls, meadows, domes, and distant peaks. The presence of motel-like lodge structures and parking lots in the project area, and their appearance and orientation, would continue to detract from sightseeing opportunities, particularly in areas where human-made structures dominate or block views of important features such as Yosemite Falls. Use of Valley Loop Trail, Yosemite Falls Trail, and multi-use paved trails in the project area would continue. The multi-use paved trails and the stock trail would remain discontinuous with other Valley trails (see figure II-1). Circulation at the Lodge would continue to have a vehicular focus, and vehicles traveling through the project area would remain hazardous to pedestrians and bicyclists within the project area, including those crossing Northside Drive between Yosemite Lodge and Yosemite Falls. Climbing, picnicking, swimming, winter activities, and tours in the project area would not be affected under Alternative 1. Continued operation of the Lodge, Camp 4, and Northside Drive under Alternative 1 would result in a local, long-term, minor, adverse impact on recreation resources.

Impact Significance. Local, long-term, minor, adverse impact.

Operation-related Orientation and Interpretation Effects. Operation of the Lodge under Alternative 1 would remain similar to existing conditions. The tour/activities desk located at the Lodge registration building would continue to provide park information, such as arrangements for tours, transportation, Yosemite Mountaineering School classes, horse rides, and other activities. The kiosk at Camp 4 would also continue to provide additional visitor orientation information. Signage for trails and multi-use paved trails would continue to be limited in the project area, and the connection between the trailhead sign at the Camp 4 parking area and the Valley Loop/Yosemite Falls trail system would remain unclear, making wayfinding in the project area difficult for visitors. Interpretive programs at the Lodge amphitheater, evening programs in the Yosemite Lodge Cliff Room, and motor coach tours departing from the Lodge would not be affected under Alternative 1. The Cliff Room would continue to be undersized for the purpose this facility serves. Continued operation under Alternative 1 would result in a local, long-term, minor, adverse impact on orientation and interpretation opportunities.

Impact Significance. Local, long-term, minor, adverse impact.

Operation-related Effects Visitor Services. Under Alternative 1, public use of visitor services in the project area would remain similar to existing conditions. Safety repairs of facilities would be made, but no changes to the types or locations of facilities would occur. Lodging rooms and campsites would typically be occupied on weekends and many weekdays.

The lodge would retain its motel-like experience, with a lack of connection between the lodging units and the natural resources of Yosemite Valley. The Cliff Room and the Camp 4 registration kiosk and restroom facility would remain undersized for the function served by these facilities. Park visitors traveling through the project area to the Lodge, Camp 4, or other park attractions would continue to experience delays, particularly along Northside Drive at the intersection of the Lodge, Yosemite Falls, and Northside Drive. Food, retail, and other visitor services would remain as at present. Continued operation under Alternative 1 would result in a local, long-term, minor to moderate, adverse impact on visitor services.

Impact Significance. Local, long-term, minor to moderate, adverse impact.

Operation-related Night Sky Effects. Under Alternative 1, the project area would continue to include some lighting that introduces light trespass, particularly due to the age of the lighting infrastructure (technological advances in lighting design decrease light pollution). Although this intrusion diminishes night sky resources in the project area, the lighting is minimal and is required for visitor safety and security. Continued operation of the Lodge facilities under Alternative 1 would result in a local, long-term, negligible, adverse effect on the night sky in the project area.

Impact Significance. Local, long-term, negligible, adverse impact.

Summary of Alternative 1 Impacts. Over the long term, motel-like lodge structures and facilities would continue to detract from sightseeing opportunities, trails and paths would remain discontinuous with other Valley trails, and the vehicular focus of the area would continue to present a hazard to pedestrians and bicyclists, resulting in a local, long-term, minor, adverse impact on recreation resources in the project area. Signage for trails and multi-use paved trails would continue to be limited, and the connection between the trailhead sign at the Camp 4 parking area and the Valley Loop/Yosemite Falls trail system would remain unclear, resulting in a local, long-term, minor, adverse impact on orientation and interpretation resources. Under

Alternative 1, Lodge and Camp 4 facility locations, appearance, number of units, sizing of support facilities, and the level of service experienced by park visitors along Northside Drive would constitute a local, long-term, minor to moderate, adverse impact. Under Alternative 1, continued operation of the Lodge and Camp 4, including nighttime lighting, would result in a local, long-term, negligible, adverse effect on the night sky in the project area.

Cumulative Impacts

Cumulative impacts on visitor experience are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite Valley area, in combination with potential effects of this alternative. The projects identified include only those that could affect visitor experience within the Valley.

Reasonably foreseeable projects that could have a beneficial cumulative effect on visitor experience include projects proposed under the *Yosemite Valley Plan*, such as development of a new visitor center in Yosemite Village, expanded transit service to more park destinations, and improved orientation and interpretation opportunities. The *Yosemite Valley Plan*, however, would prescribe an overall reduction in camping and lodging units in Yosemite Valley, and removal of some existing visitor services, which would have an adverse effect on the provision of visitor services. The *Yosemite Valley Plan* would result in short-term disruptions of the visitor experience due to construction as well as to the introduction of light trespass if construction occurs at night. New or rehabilitated facilities could increase the amount of nighttime lighting in the Valley; however, the application of architectural lighting technology at new or rehabilitated facilities would not cause any more light pollution than occurs at existing facilities, resulting in neutral and negligible impacts.

The *Yosemite Valley Plan* proposes to enhance the quality of the visitor experience in Yosemite Valley by reducing automobile congestion and limiting crowding. The *Yosemite Valley Plan* would result in a substantial decrease in traffic volumes and a considerable improvement in traffic flow within Yosemite Valley. On most days, visitors would find a more tranquil environment; the number of automobiles in the Valley would be substantially reduced, and opportunities to experience the Valley without the presence of automobiles would be expanded.

Other projects that could have a beneficial cumulative effect on visitor experience include the following: Ecological Restoration at Eagle Creek, Lower Yosemite Fall Project, Yosemite Valley Shuttle Bus Stop Improvements, and Yosemite Area Regional Transportation System. These projects could result in short-term disruptions of the visitor experience due to construction, but in the long term would provide new recreation opportunities, directional signage and interpretive displays, visitor services facilities, and improved transit service to more park destinations (although fewer private cars in the Valley would reduce spontaneity).

The Merced River Plan would have a beneficial cumulative effect on visitor experience in the Merced River corridor by protecting and enhancing a spectrum of opportunities for visitors in the corridor. The management zoning prescribed under the Merced River Plan provides for various types of recreation, from opportunities for solitude to interactive and group-based recreational activities, some of which would include orientation and interpretation.

Actions that could have a net beneficial cumulative effect on the night sky include those that reduce the number of vehicles entering the park and therefore reduce light sources and airborne

emissions (e.g., the Yosemite Area Regional Transportation System). Implementation of the *Yosemite Valley Plan* would restore 140 acres of degraded areas and result in a net decrease in development within Yosemite Valley. The Merced River Plan prescribes the restoration of degraded areas of the Merced River corridor. These projects would reduce night sky impacts where restoration activities remove lighting sources.

The cumulative projects would have a local, long-term, minor, beneficial effect on visitor experience due to expanded opportunities in the park and improved transit service to more park destinations. Alternative 1 and the cumulative projects would result in a local, long-term, minor, beneficial impact on visitor experience due to expanded opportunities in the park and improved transit service to more park destinations. The adverse effects of Alternative 1 on visitor experience at and in the vicinity of the project area, the overall reduction of overnight lodging and camping units under the *Yosemite Valley Plan*, and the potential increase in nighttime lighting in the Valley associated with new facilities would be offset by the beneficial impacts of the cumulative projects.

Impairment

Alternative 1 would result in a local, long-term, negligible to moderate, adverse effect on the visitor experience in the project area. Although the project area provides important opportunities for enjoyment of the park, the effect of this alternative on visitor experience would be localized to the Yosemite Lodge and Camp 4 areas and thus would not be considered severe. The diversity and quality of visitor experience opportunities throughout the remainder of Yosemite Valley and the park would not be affected. Therefore, Alternative 1 would not impair the visitor experience for future generations.

Socioeconomics

Analysis

Operation-related Effects on the Regional Economy. Under Alternative 1, the operation of visitor facilities within the Yosemite Lodge Area Redevelopment area would continue similar to existing conditions. Currently, project area visitor facilities account for a substantial portion of the visitor spending generated by Yosemite National Park visitors and as such have a beneficial effect on the regional economy. The contribution to the regional economy by visitor spending and related employment generated by the project would continue, similar to existing conditions, since the current visitor facilities are operating at nearly full occupancy most of the year. While some additional overnight visitation could be accommodated by the facilities in the off-season (from late fall until early spring, excluding holiday periods), the economic benefits to the region would be negligible to minor, because there would be an abundance of other unused lodging capacity in the region and the benefits would depend on sufficient visitor demand during off-season periods. As a result, implementation of Alternative 1 is expected to have a regional, long-term, negligible to minor, beneficial impact on the regional socioeconomic environment.

Impact Significance. Regional, long-term, negligible to minor, beneficial impact.

Operation-related Effects on Employee Housing. Under this alternative, operation of employee housing within the project area would continue similar to existing conditions. The employee housing conditions would remain inadequate, as most employees are housed in temporary structures erected after the 1997 flood; those structures are poorly constructed and have few

amenities. While some employees appreciate the location and privacy that the single units provide, continued use of these temporary housing units would have a local, long-term, negligible to minor, adverse impact.

Impact Significance. Local, long-term, negligible to minor, adverse impact.

Summary of Alternative 1 Impacts. Alternative 1 would have a regional, long-term, negligible, beneficial impact on visitor spending and employee housing. The adverse effect associated with substandard employee housing would be offset by the beneficial effect of continued visitor spending associated with project area facilities.

Cumulative Impacts

Cumulative impacts are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region, in combination with potential effects of this alternative. Appendix F, Cumulative Projects, identifies the applicable National Park Service projects expected to occur within Yosemite Valley.

The development of additional visitor facilities such as lodging and campgrounds would likely increase visitation, which, in turn, would beneficially affect the region's economy by generating greater visitor spending. These impacts would generally be long term, since they would result in a permanent increase in the region's lodging capacity and future park visitation. Recent growth trends in lodging development (and thereby lodging capacity) outside the park are expected to continue for the foreseeable future (Randall 2003). This additional lodging capacity would likely generate increased visitor spending for the region, although the magnitude of the net beneficial cumulative effect on the economy would depend on the amount of new visitation and visitor spending that these new lodging facilities attract to the region. Furthermore, these recent growth trends in lodging development outside the park would also result in additional construction activity and spending (Randall 2003), which would have a beneficial impact on the regional economy. There would likely be beneficial construction spending impacts on the regional economy from other cumulative projects, including residential and other development projects within the park, such as the construction of campgrounds, lodging, employee housing, and other facilities (e.g., Lower Yosemite Fall Project, Curry Village and East Yosemite Valley Campgrounds Improvement Project, Curry Village Employee Housing, etc.). These beneficial impacts would be generated during the construction period and thus would be short term in duration. The combined long-term visitor spending and short-term construction spending from regional development are expected to result in a long-term, minor to moderate, beneficial cumulative impact on the regional economy.

Alternative 1 and the cumulative projects would have a regional, long-term, minor to moderate, beneficial impact on the regional economy. The beneficial effects of continued visitor spending associated with project area facilities would contribute to visitor and construction-related spending in the region.

Impairment

Impairment is not addressed in the socioeconomic analysis, because this resource topic is peripheral to the protection of the park for future generations.

Transportation

Analysis

Operation-related Effects on Traffic Flow Conditions. Under Alternative 1, the number of lodging units, campsites, and parking spaces at Yosemite Lodge and Camp 4 would remain unchanged, as would the alignment and configuration of Northside Drive. The number of daily vehicle trips (by buses and private automobiles) generated by activities at those locations (visitors and employees) would remain the same. Traffic flow conditions on roadways in the Yosemite Lodge area would be the same as described in Chapter III, Affected Environment.

Northside Drive would continue to have four intersections between the Yosemite Creek Bridge and the one-way portion of Northside Drive just west of Yosemite Lodge. Because of high traffic volumes and pedestrian crossings during peak visitation periods, traffic congestion would remain problematic along Northside Drive in the Yosemite Lodge area and at major intersections, with vehicle queues backed up to the Yosemite Village area during peak periods. The roadway internal to the Yosemite Lodge area would continue to bisect parking areas and divide lodging units from the common facilities (e.g., restaurants and retail stores), which would continue to cause inefficient turning movements and multiple pedestrian crossings that adversely affect traffic flow conditions. Northside Drive would continue to operate at a level of service E during the outbound peak hour between Yosemite Village and Yosemite Lodge, and the intersection on Northside Drive at the Lower Yosemite Fall parking lot would continue to operate at level of service F, which would continue to have a clearly noticeable adverse effect on traffic flow conditions.

Impact Significance. Local, long-term, moderate, adverse impact.

Operation-related Effects on Traffic Safety/Conflicts. As stated above, under Alternative 1, the number of daily vehicle trips (by buses and private automobiles) generated by activities at Yosemite Lodge and Camp 4 would remain unchanged, as would the number of parking spaces and the alignment and configuration of Northside Drive. Traffic safety conditions in the Yosemite Lodge area would be the same as described in Chapter III, Affected Environment.

Because of high traffic volumes, turning movements, and pedestrian crossings during peak visitation periods, conflicts between vehicles and pedestrians would continue to occur along Northside Drive and the Yosemite Lodge area's internal roadway. Pedestrian and bicycle crossings of Northside Drive in the Yosemite Lodge area would remain hazardous to pedestrians/bicyclists, and high levels of conflicts among the different traffic streams at the congested intersection on Northside Drive at the Lower Yosemite Fall parking lot would continue to create traffic safety hazards.

Impact Significance. Local, long-term, moderate, adverse impact.

Summary of Alternative 1 Impacts. Continued operations at Yosemite Lodge and Camp 4 would cause local, long-term, moderate, adverse impacts to traffic flow and traffic safety conditions due to the unchanged alignment of Northside Drive and unchanged circulation patterns.

Cumulative Impacts

Cumulative effects to transportation discussed herein are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region, in combination with potential effects of this alternative. The projects identified include only those projects that could affect traffic flow and/or traffic safety conditions within the park.

Past, present, and reasonably foreseeable projects that could have a long-term beneficial effect on transportation include the *Yosemite Valley Plan* and the Yosemite Area Regional Transportation System. Since 1950, the population of California has tripled, and the rate of increase in vehicle-miles-traveled has increased six-fold. Transportation conditions within the park have been influenced by this surge in population growth. In the 1980s, a Restricted Access Plan was developed for use when traffic and parking conditions in Yosemite Valley are overcongested. The plan has the effect of reducing the number of incoming vehicles until the traffic volume and parking demand in Yosemite Valley decrease sufficiently (as visitors leave the Valley) to stabilize traffic conditions, resulting in a long-term, major, beneficial impact to traffic flow on El Portal Road and Big Oak Flat Road. The *Yosemite Valley Plan* proposes to enhance the quality of the visitor experience in Yosemite Valley by reducing automobile congestion and limiting crowding. It also proposes traffic management systems and options for the sizing and placement of parking lots, both within and outside of Yosemite Valley. Parking lots outside the Valley could be used to intercept day visitors and shift those visitors to Valley-bound shuttle buses. The *Yosemite Valley Plan* would result in a substantial decrease in traffic volumes and a major improvement in traffic flow within Yosemite Valley, and particularly on El Portal Road between its intersection with Big Oak Flat Road and Pohono Bridge. Therefore, the *Yosemite Valley Plan* would result in a local, long-term, major, beneficial impact to traffic flow, access, circulation, and transportation safety conditions along the Merced River corridor and in Yosemite Valley.

Construction of some of the reasonably foreseeable projects planned or approved within Yosemite Valley, such as the Curry Village Employee Housing, Lower Yosemite Fall, and the Curry Village and East Yosemite Valley Campgrounds Improvement Project, could result in short-term adverse impacts on transportation. The adverse effects of these projects would be localized and short term in nature, and primarily related to construction-generated traffic on roadways serving the project sites. Construction activities would increase traffic on local roadways, both from equipment and material haul trips and commute trips by construction workers. Some construction projects, such as the El Portal Road Improvement Project (the segment from Cascades Diversion Dam to Pohono Bridge), could also result in trip delays. The intensity of the adverse effects from the construction-related traffic would range from minor to moderate, depending on which, if any, of the construction projects occurred simultaneously. Activities related to the construction of the reasonably foreseeable projects would result in a local, short-term, minor to moderate, adverse impact to traffic flow.

Collectively, the cumulative projects discussed above would have a local, long-term, major, beneficial impact on transportation conditions within the park. Construction activities associated with the development of the cumulative projects, however, would reduce the intensity of this beneficial impact to a minor or moderate level in the short term. Alternative 1 and the cumulative projects would result in a local, long-term, moderate, beneficial impact on transportation conditions within the park.

Impairment

Impairment is not addressed in the transportation analysis, because this resource topic is peripheral to the protection of the park for future generations.

Park Operations and Facilities

Analysis

Effects on Resources Management. Alternative 1 would not affect the resources management division.

Impact Significance. No effect.

Effects on Interpretation Services. Alternative 1 would not affect the interpretation services division.

Impact Significance. No effect.

Effects on Concessioner Management. Alternative 1 would not affect the concessioner management division.

Impact Significance. No effect.

Effects on Facilities Management. Alternative 1 would not substantially affect the facilities management division. The Yosemite Valley Sanitary Sewer System Capital Improvement Plan (Capital Improvement Plan) identified and prioritized repairs and rehabilitation needed for the sewer system at Camp 4 and Yosemite Lodge. The purpose of the Capital Improvement Plan is to ensure the reliability of the existing system and eliminate sanitary sewer spills, in addition to providing a baseline for the implementation of *Yosemite Valley Plan* projects. Under Alternative 1, sewer system repairs and upgrades would be implemented according to priorities identified in the Capital Improvement Plan. Implementation of the Capital Improvement Plan is expected to take place line by line, as needed, over a longer period of time than the more comprehensive approach to upgrading the system that would occur in conjunction with the action alternatives.

The size, capacity, and condition of the water system in the project area are not known at this time (Provost & Pritchard 2003), although some components are known to have specific problems. For example, the pressure-reducing valve at the delivery location to the Yosemite Lodge system is inoperable and is fully open (Sasaki 2002). Because the water system is more than 50 years old, it is expected to require ongoing repairs in the future. The frequency of repairs and maintenance is likely to increase over time, as the system continues to age. The facilities management division currently addresses problems that arise with the utility infrastructure and would continue to do so under this alternative.

Impact Significance. Local, long-term, minor, adverse impact.

Effects on Visitor Protection. The fire suppression capability of the water system is considered adequate, and the uses of Yosemite Lodge and Camp 4 would not change and would not increase the risk of fire over existing conditions; therefore, this alternative would not affect visitor protection.

Impact Significance. No effect.

Summary of Alternative 1 Impacts. The aging utility infrastructure at Camp 4 and Yosemite Lodge, especially the sewer system, would continue to place ongoing demands on facilities management staff for repair and maintenance work. The fire protection capacity of the water system would remain uncertain, potentially presenting visitor protection division firefighters with additional challenges under Alternative 1. Together, these conditions would result in a local, long-term, minor, adverse effect on park operations.

Cumulative Impacts

Cumulative effects on park operations and facilities discussed herein are based on analysis of past, present, and reasonably foreseeable future actions in Yosemite Valley, in combination with potential effects of this alternative. The extent to which past, present, or reasonably foreseeable projects would have a cumulative effect on National Park Service management is determined largely by whether such projects would affect demand for park operations services and facilities. Park operations services include maintenance of utility systems, provision of interpretation programs, visitor protection, resource management, and concessioner management.

Examples of actions that could affect park operations and facilities include planning and implementation projects related to the *Yosemite Valley Plan*, the Merced Wild and Scenic River Comprehensive Management Plan, Fire Management Plan Update, the *East Yosemite Valley Utilities Improvement Plan*, the Yosemite Area Regional Transportation System, the Lower Yosemite Fall Project, the Yosemite Valley Shuttle Bus Stop Improvements, the Rehabilitate Ansel Adams Gallery Buildings project, the Curry Village and East Yosemite Valley Campgrounds Improvement Project, the Curry Village Employee Housing project, the Ecological Restoration of Flood-Damaged Campgrounds, the Rehabilitate Yosemite Valley Campground Restrooms project, Ecological Restoration at Eagle Creek, Cook's Meadow Ecological Restoration, the Happy Isles Gauging Station Bridge Removal, the Happy Isles to Vernal Fall Trail Reconstruction, the El Portal Road Improvement Project, and Cascades Diversion Dam Removal Project. These projects have mixed adverse and beneficial effects on park operations. For example, the development of comprehensive management plans has short-term adverse effects on park operations related to planning, but enables more effective and efficient management of park facilities, a beneficial long-term effect. Implementation of the campground improvement and rehabilitation projects increases demand on park operations during the planning and construction phases and increases long-term demand for various park operations services and facilities to the extent these projects increase visitor capacity. However, over the long term such improvements also reduce demand for maintenance and repair services. Ecological restoration projects increase demand on resources management staff during planning and implementation phases, but over the long term reduce demands on park resource management staff.

These past, present, and reasonably foreseeable future actions could have adverse cumulative effects on park operations and facilities because of the increased demand on park operations services and facilities over both the short and long term. The cumulative projects would result in a long-term, moderate, adverse impact due to the clearly detectable increase in demand for park operations services and facilities. The adverse effect would be somewhat offset by the beneficial impacts associated with more effective and efficient management of park facilities and reduced demand for maintenance and repair services associated with the cumulative projects.

Alternative 1 and the cumulative projects would have a regional, long-term, moderate, adverse impact on park operations and facilities. The adverse impact associated with Alternative 1 (including maintenance demands of the sewer system and the water system) would contribute, to a limited extent, to the adverse effect of increased demand for park operations services and facilities of the cumulative projects.

Impairment

Park operations are not addressed in the impairment analysis, because this resource topic is peripheral to the protection of the park for future generations.

Hazardous Materials

Analysis

Effects of Hazardous Materials Management. Alternative 1 would not affect hazardous materials management practices within the project areas.

Impact Significance. No effect.

Effects of Undiscovered Underground Storage Tanks. Alternative 1 would not affect the status of underground storage tanks in the project area. Any unknown underground tanks at Yosemite Lodge, Camp 4, or the Indian Cultural Center would remain undetected. Although all known tanks have been removed and two tank sites would continue to be remediated, a comprehensive survey using a magnetometer and ground-penetrating radar has not been conducted. Therefore, the possibility exists that one or more undetected tanks remain within the project area. According to National Park Service staff familiar with the Yosemite Lodge area, underground tanks associated with a former gas station in the vicinity of the current Yosemite Lodge kitchen loading dock could remain (NPS 2002d). It is also considered possible, although unlikely, that an underground tank exists near the Camp 4 restroom building. An undiscovered underground storage tank containing a petroleum product such as gasoline or diesel could in time rust through and fail, allowing its contents to leak into and contaminate surrounding soils and to potentially reach and contaminate groundwater supplies. Groundwater is relatively shallow in the project area during part of the year and would likely be affected by a leaking tank. However, due to the relatively low probability that underground tanks remain within the project area, this potential adverse impact is considered minor. Because no excavation or grading activities would be undertaken for this alternative, digging equipment would not unintentionally strike and damage an underground storage tank.

Impact Significance. Local, long-term, minor, adverse impact.

Effects of Current Remediation Sites. Under Alternative 1, remediation activities would continue at the former gas station adjacent to Camp 4 and the former staff dormitory at the western end of Yosemite Lodge. The Regional Water Quality Control Board would continue to oversee the current groundwater remediation activities at the sites. Site cleanup would progress until the Regional Water Quality Control Board determined that the sites have been remediated to levels protective of public health and safety, at which time the cases would be closed. Continued remediation efforts would result in a local, long-term, moderate, and beneficial impact.

Impact Significance. Local, long-term, moderate, beneficial impact.

Effects of Asbestos-containing Materials, Lead-based Paint, and PCBs. The guest cabins and cottage at Yosemite Lodge found to contain asbestos in the 1997 asbestos survey were damaged in the 1997 flood and have since been removed. Because remaining buildings that may contain asbestos would not be disturbed, Alternative 1 would have no effect with respect to asbestos. Similarly, equipment found to contain PCBs at Yosemite Lodge would not be disturbed and therefore would not pose a risk to people or the environment. Under Alternative 1, the electrical substation next to Camp 4 would remain in place. Although PCBs exist in several transformers, and a small amount of PCBs has been found in the soil, the substation is fenced and inaccessible to the public. The equipment and soil would not be disturbed, and therefore Alternative 1 would have no effect with respect to PCBs. All the Lodge buildings that tested positive for lead were located within the 100-year floodplain of the Merced River and have been removed.

Impact Significance. No effect.

Summary of Alternative 1 Impacts. Alternative 1 would have a local, long-term, minor, beneficial effect due to the continuation of remediation efforts at the site of a former gas station adjacent to Camp 4. The beneficial effects of the alternative would be somewhat offset by adverse effects associated with the small potential for an as-yet-undiscovered underground storage tank at the site to eventually leak. This alternative would have no effect on hazardous materials management in the project vicinity, and because no buildings would be renovated or demolished and no equipment would be disturbed, asbestos fibers and PCBs would not be released to the environment.

Cumulative Impacts

Cumulative effects related to hazardous materials discussed herein are based on analysis of past, present, and reasonably foreseeable future actions in Yosemite Valley, in combination with potential effects of this alternative. The extent to which past, present, or reasonably foreseeable future projects would have a cumulative effect pertaining to hazardous materials is determined largely by whether such projects would increase or decrease the use of hazardous materials or result in the accidental spill or release of hazardous materials within the general project vicinity.

Examples of actions that could involve the use of hazardous materials include the construction or renovation of facilities within Yosemite Valley, including the Yosemite Valley Shuttle Bus Stop Improvements project, the Rehabilitate Ansel Adams Gallery Buildings project, Curry Village and East Yosemite Valley Campgrounds Improvement Project, the Curry Village Employee Housing project, and the Rehabilitate Yosemite Valley Campground Restrooms project. These past, present, and reasonably foreseeable future actions could have adverse cumulative effects pertaining to hazardous materials use, storage, or accidental release during construction, when solvents, cleansers, and fuels are more likely to be used. The cumulative projects would result in a regional, long-term, minor, adverse impact, due primarily to potential hazardous materials use during the construction of Yosemite Valley projects.

Alternative 1 and the cumulative projects would result in a regional, long-term, negligible, adverse impact on the environment. The adverse effects associated with the use, storage, or accidental release of hazardous materials during construction of the cumulative projects would be largely offset by the beneficial effects of remediation of the former gas station site near Camp 4.

Impairment

Alternative 1 would result in a local, long-term, minor, beneficial effect due to the continuation of remediation efforts at the site of a former gas station adjacent to Camp 4, reducing the risk of soil and groundwater contamination. Therefore, Alternative 1 would not impair park resources for future generations.

Alternative 2

Natural Resources

Geology, Geologic Hazards, and Soils

Analysis

Operation-related Effects of Seismic Safety. The Yosemite Lodge Area Redevelopment site would be as susceptible to earthquake ground shaking under Alternative 2 as it would under Alternative 1. However, new construction of Lodge facilities and guest lodging units under Alternative 2 would comply with modern building codes that incorporate improved earthquake engineering design criteria. Appropriate design criteria conforming to current building codes would ensure that the new construction could withstand the expected ground motion during an earthquake. Nonetheless, the improved structural integrity of the new buildings would not preclude the potential for damage, furniture upset, or injury during a seismic event.

As under Alternative 1, the National Park Service, in cooperation with the U.S. Geological Survey, would continue to address seismic hazards in planning and management activities to minimize the potential impact on park visitors and facilities. The National Park Service would avoid locating facilities in areas where such facilities could be directly affected by secondary effects of ground shaking, such as ground failure or rockfall. Under Alternative 2, Camp 4 campsites and facilities would be located outside the base of talus zone. The National Park Service would also continue the practice of conducting site-specific geologic analysis prior to the construction of buildings and other facilities to determine potential soil instability.

Impact Significance. Local, long-term, negligible, beneficial impact.

Operational Effects of Rockfall Hazards. Under Alternative 2, the rockfall hazard at the Yosemite Lodge Area Redevelopment site would remain essentially the same as that described for Alternative 1, except that the miscellaneous Camp 4 campsites and facilities would be relocated out from the base of talus zone to an area within the shadow line zone. The relocation of Camp 4 facilities outside the base of talus zone would reduce the potential for rockfalls to cause injury to campers.

Under Alternative 2, the National Park Service would develop the Indian Cultural Center at the west end of Camp 4 near the base of the granite cliffs. The community building associated with the Indian Cultural Center would be located outside the base of talus zone; the umachas, roundhouse, and sweatlodge would be placed throughout the Indian Cultural Center site, some within the base of talus zone and some within the shadow line zone. As the umachas, roundhouse, and sweatlodge are considered miscellaneous structures, their placement within the base of talus zone would be consistent with the *Geologic Hazard Guidelines*, as no other practicable alternative exists at the site.

The boulders in and around the Indian Cultural Center fell from the adjacent granite cliffs and came to rest in this area during numerous past rockfall events over hundreds of years. Considering the entire Yosemite Lodge Area Redevelopment site, the Indian Cultural Center has the highest potential to expose people to injury and structures to damage. Rockfalls could also occur within Camp 4, and the increase in the number of campsites as well as attractive improvements to this area could expose a greater number of people to these hazards. However, it is not known whether a rockfall will occur in this area over the useful life of the project, because rockfalls are unpredictable and infrequent.

The potential effects of a rockfall event change depending on the type of occupancy associated with facilities in the base of talus or shadow line zones. The risk of injury or damage would increase, for example, with an increase in annual person-hours at a facility located in a vulnerable area. The frequency and magnitude of rockfalls within the Valley vary considerably. Singular events involving stones or rocks occur more frequently, depending upon weather conditions, freeze/thaw conditions, moisture conditions, and rock composition/condition. Larger events involving up to 100,000 cubic meters of debris may occur on an interval of over 10 years. The location of these movements can also be fairly random within the Valley.

The restrictions provided in the *Geologic Hazard Guidelines* and the cooperative efforts of the National Park Service and U.S. Geological Survey to identify potential hazardous areas and relocate buildings reduce the potential that a rockfall could occur and cause injury or damage. Although the Indian Cultural Center would attract an additional number of people to a potentially hazardous rockfall zone, the development restrictions in the *Geologic Hazard Guidelines* would reduce the probability of injury or damage associated with rockfalls. Therefore, as under Alternative 1, the impact of rockfalls would be moderate and adverse.

Impact Significance. Local, long-term, moderate, adverse impact.

Construction-related Effects on Soils. Construction of Alternative 2 would include temporary grading and construction activities. Grading activities could cause erosion of exposed soil. Temporary construction-related erosion could occur during periods of rain, while soil is exposed, and prior to the site restoration and cleanup phases of the project. Erosion and soil loss typically occur immediately after initial site grading or following construction of a fill slope with exposed soil. This would result in local, short -term, moderate, adverse impact.

As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, mitigation to reduce erosion includes compliance with federal and state regulations to develop and implement a comprehensive stormwater pollution prevention plan for construction activities (i.e., erosion control and stormwater pollution prevention measures to limit soil erosion and maintain sediment control). Development of a stormwater pollution prevention plan would occur in conjunction with the National Pollutant Discharge Elimination System permit for construction activities. Soil degradation would be minimal due to erosion controls and the intermittent nature of the grading activities. Implementation of mitigation measures would reduce adverse effects on soils to negligible to minor.

Impact Significance After Mitigation Included in the Project. Local, short-term, negligible to minor, adverse impact.

Operation-related Effects on Soils. Under Alternative 2, approximately 38 acres in three areas within the Yosemite Lodge Area Redevelopment area would be restored and revegetated. Alternative 2 would reduce the amount of soil areas that are currently contributing to erosion, soil compaction, and removal of surface soils. The restoration area includes most of the Merced River floodplain from realigned Northside Drive to the Merced River, soil areas considered highly valued resources by the National Park Service. When complete, the restoration would reverse impacts to sensitive soils, such as the Leidig Loamy Very Fine Sand, which is susceptible to compaction and erosion, caused mainly by vehicles and visitor foot traffic in unpaved areas. Revegetation programs proposed under Alternative 2 would also reverse the current rate of soil loss in the exposed areas. The trail system proposed under Alternative 2 would reduce, to some degree, uncontrolled access to the river, which is partly responsible for erosion and decreased bank stability. Alternative 2 is beneficial because it would reverse, reduce, and eliminate soil degradation caused by erosion, soil compaction, and removal of surface soils.

Impact Significance. Local, long-term, minor, beneficial impact.

Summary of Alternative 2 Impacts. Soil degradation associated with construction activities under Alternative 2 would occur through each project phase and would result in a local, short-term, moderate, adverse impact. As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, standard mitigation including erosion controls and native foliage protection would reduce the construction-related impacts to a negligible to minor intensity. Overall, Alternative 2 would have a local, long-term, negligible, beneficial impact. The beneficial impacts of Alternative 2 associated with restoration and revegetation activities, improved seismic safety associated with new building construction, and relocation of essential facilities outside the base of talus zone would offset the adverse effects associated with construction impacts, hazards from unavoidable seismic ground shaking, and continued placement of facilities within the base of talus and shadow line zones.

Cumulative Impacts

The cumulative impact analysis for geologic resources and soils under Alternative 2 is the same as described for Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 2 and the cumulative projects would result in a regional, long-term, moderate, beneficial impact with respect to overall seismic safety and the reduction of rockfall hazards; although the earthquake and rockfall hazards remain largely unchanged at the Yosemite Lodge Area Redevelopment site under Alternative 2, other projects within the Valley and implementation of the *Geologic Hazard Guidelines* would reduce the overall risk of geologic hazards. The regional, long-term, moderate, beneficial impact to soil resources under the cumulative projects would add to the soil restoration proposed under Alternative 2, resulting in a net regional, long-term, moderate, beneficial impact to soil resources.

Impairment

Overall, Alternative 2 would have a local, long-term, negligible, beneficial impact on geologic resources and soils. Therefore, Alternative 2 would not impair geologic resources for future generations.

Floodplains and Water Resources

Analysis

Construction-related Effects on Surface Water Quality. Under Alternative 2, stormwater runoff originating from construction-disturbed areas could become laden with sediment or pollutants from eroded soils or hazardous materials used during construction. Over the 13-year construction period, this could result in a regional, long-term but temporary, moderate, adverse impact.

Mitigation under this alternative includes compliance with federal and state regulations to develop and implement a comprehensive stormwater pollution prevention plan for construction activities and addresses all aspects of stormwater pollution prevention, including measures to limit soil erosion and maintain sediment control, stabilization practices, maintenance and inspection activities, record keeping and retention, and reporting requirements (see Appendix C, Mitigation Measures Common to All Action Alternatives). Erosion control methods typically employ siltation and sediment control devices, such as silt traps, fencing, and filter fabric, to reduce erosion and minimize discharge of sediments to riparian channels. In addition, proper use and storage of hazardous materials, and developing and implementing a spill prevention/response plan in accordance with hazardous materials and spill prevention/response measures (see Appendix C, Mitigation Measures Common to All Action Alternatives) would minimize potential leakage or spills of hazardous materials used during construction. Development of a stormwater pollution prevention plan would occur in conjunction with the National Pollutant Discharge Elimination System permit for construction activities associated with Alternative 2. The stormwater pollution prevention plan would be submitted to the park for review/approval prior to construction activities.

Compliance with the National Pollutant Discharge Elimination System permit and subsequently developing and implementing a stormwater pollution prevention plan during construction activities would reduce potential adverse construction-related stormwater quality impacts. Alternative 2 would have a local, short-term, negligible, adverse impact to surface water quality.

Impact Significance After Mitigation Included in the Project. Local, short-term, negligible, adverse impact.

Impact to the Merced River Floodplain. Under Alternative 2, guest lodging and Lodge facility buildings would be removed from the portion of the Merced River 100-year floodplain located between the central Lodge area and the Merced River. Structures proposed or remaining in the floodplain would be the realigned Northside Drive, the registration parking lot, a multi-use paved trail, Lodge parking and roadways, overnight bus parking, and the sewage lift station. As discussed under Alternative 1, a major flood, such as the event that occurred in January 1997, is likely to occur again. Removal of the guest lodging buildings (Hemlock, Maple, Alder, and Juniper), the maintenance buildings, Wellness Center, and miscellaneous buildings during the Phase 1 demolition would restore the 100-year floodplain to near-natural flow conditions by removing major obstacles to high flood flow. The roads and parking lots proposed for this area under Alternative 2 could affect flood flow, but these developments would not be expected to substantially alter the flow path of the flood waters because they would have low relief and would not be constructed on an embankment. Alternative 2 would improve the condition of the 100-year floodplain by removing the major flow impediments, including guest lodging and maintenance buildings.

Impact Significance. Local, long-term, minor, beneficial impact.

Impacts of Human-made Flow Diversions. Under Alternative 2, a diversion dam would be removed to restore the natural flood flow of the Merced River within this reach. Once removed, high flood flow in the Merced River would be unimpeded to inundate portions of the floodplain not previously possible due to the presence of the diversion dam. Removing the diversion dam would return the affected portion of the floodplain to a more natural flow condition. Although the diversion dam was constructed to protect the lodging units closest to the Merced River from flooding (those removed after the 1997 flood), removal of the dam would not introduce a new flood hazard because the Phase 1 demolition under Alternative 2 would remove the remaining lodging units within the 100-year floodplain. The removal of the diversion dam structure from the banks of Yosemite Creek would help return the 100-year floodplain to near-natural, free-flow conditions and therefore would constitute a beneficial impact.

The riprap revetment currently in place along Yosemite Creek would also be removed under Alternative 2 to restore the natural flow regime along Yosemite Creek. As the affected reach is relatively short, the impacts to the creek due to the revetment removal would be local, minor, and beneficial.

Impact Significance. Local, long-term, minor, beneficial impact.

Impacts of Drainages and Impervious Surfaces. Under Alternative 2, the drainage system would be improved at the Yosemite Lodge Area Redevelopment area. This alternative would improve the performance of the site drainage system by installing additional drain culverts and sizing these culverts appropriately. All drainage facilities would be designed for, at a minimum, a 10-year flood event, and those next to proposed buildings would be designed for a 50-year flood event. Facilities crossing near or adjacent to emergency vehicle routes would be designed for a 100-year event. The system proposed under this alternative increases capacity, thereby reducing potential localized flooding.

As discussed under Alternative 1, impervious surfaces impede natural infiltration of surface water, whereas pervious surfaces allow surface water to readily infiltrate into the ground. Compared to Alternative 1, Alternative 2 would increase impervious surfaces at the project site by approximately 191,000 square feet (4.3 acres), while decreasing pervious surfaces by approximately 138,200 square feet (3.0 acres). Semipervious surfaces would decrease by approximately 53,000 square feet (1.2 acres). Within the 100-year floodplain, Alternative 2 would increase impervious surfaces by approximately 94,400 square feet (2.0 acres) over the impervious surface area in Alternative 1, and decrease semipervious surfaces by approximately 72,300 square feet (1.6 acres) (see table II-1 in Chapter II, Alternatives). The increase of impervious surfaces both in the project site and the floodplain would further reduce natural infiltration and consequently reduce recharge to the shallow water table. Decreased infiltration could also affect adjacent wetlands by reducing underflow to the wetland.

Impervious Surface Area in the Yosemite Lodge Area Redevelopment Site. Under Alternative 1, approximately 16% of the total area at the project site is impervious, 6% is semipervious, and 78% is pervious. Under Alternative 2, approximately 20% of the project site would be impervious, 5% semipervious, and 75% pervious. The changes in impervious, semipervious, and pervious surface areas within the site would not represent a substantial change, considering the overall size of the project area and other proposed restoration efforts. The increase in impervious areas and

decrease in pervious areas could affect stormwater surface runoff rates and volumes. However, the improvements to the stormwater drainage system proposed under this alternative would accommodate those increases and provide necessary improvements to the current drainage system to reduce erosion and other adverse effects of high-volume storm flows. Furthermore, these increases in impervious surface would not be expected to significantly decrease current infiltration rates or groundwater levels in the shallow water table.

Impervious Surface Area in the Floodplain. Under Alternative 1, 6% of the 100-year floodplain is covered with impervious surfaces and 4% with semipervious surfaces. Under Alternative 2, approximately 11% of the floodplain would be impervious surfaces and less than 1% would be semipervious surfaces. The overall increase in impervious floodplain surface area could be realized as reduced lateral underflow of groundwater to wetlands, localized water level decreases in the shallow water table, or increased overland flow of stormwater. Stormwater flow increases could also lead to increased surface soil erosion.

Impact Significance. Local, long-term, minor, adverse impact.

Operation-related Effects on Surface Water Quality. Under Alternative 2, surface water quality and the sources that affect water quality would be improved over current conditions. Nonpoint sources such as petroleum from parking lots and sediments from eroded soil surfaces are most capable of degrading water quality in Yosemite Creek and the Merced River. The proposed drainage improvements would include permanent on-site pollutant control facilities such as oil/water separators to treat runoff prior to discharge. Drainage designs that incorporate energy dissipation structures, such as rock-lined channels, culverts, and channel lining, would be used to reduce the effects of erosion and sedimentation. Perforated drainage lines and drainage blankets would help accommodate localized drainage patterns in the area. Drainage improvements under Alternative 2 would reduce surface water contaminants and reduce erosion and sedimentation, resulting in a beneficial impact.

Impact Significance. Local, long-term, minor, beneficial impact.

Summary of Alternative 2 Impacts. Stormwater runoff from construction sites would result in a moderate adverse impact to surface water quality. Implementation of mitigation measures, including development of a comprehensive stormwater pollution prevention plan (see Appendix C, Mitigation Measures Common to All Action Alternatives), would reduce the intensity of the construction-related impacts to negligible. Overall, Alternative 2 would have a local, long-term, minor, beneficial impact on floodplains and water resources. The beneficial impacts associated with removal of major flow impediments from the 100-year floodplain; removal of the diversion dam and revetments from the banks of Yosemite Creek to return the 100-year floodplain to near-natural, free-flow conditions; and improvements to the drainage system would largely offset the adverse effects associated with construction-related stormwater runoff and increased impervious surface area at the project site.

Cumulative Impacts

The cumulative impact analysis for floodplains and water resources under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

The past, present, and future projects considered cumulatively with the Alternative 2 would have a regional, long-term, moderate, beneficial effect on hydrologic processes and water quality, because the removal of flow impediments and improvements to the drainage system under Alternative 2 would contribute to the long-term beneficial effects associated with the overall effort to improve water resources in Yosemite Valley and return natural flow to river and tributary systems. The beneficial impacts would offset the adverse construction- and development-related impacts associated with Alternative 2 and the cumulative projects.

Impairment

Alternative 2 would result in a local, long-term, minor, beneficial impact on floodplains and water resources. Therefore, Alternative 2 would not impair these resources within Yosemite National Park for future generations.

Wetlands

Analysis

Construction-related Effects on Wetlands. Compared to Alternative 1, the size, integrity, and connectivity of other waters of the U.S. (i.e., riverine intermittent drainages) at the Yosemite Lodge Area Redevelopment site would slightly diminish in the project area during Phase 1 and 2 construction, resulting in a local, long-term but temporary, moderate, adverse impact. No wetland waters of the U.S. would be affected under Alternative 2.

During Phases 1 and 2 of construction, a cumulative total of 0.43 acres of other waters of the U.S. (specifically, riverine intermittent drainages) would be adversely affected by construction activities to install and remove utilities and develop project facilities, including parking areas, roadways, and trails (i.e., multi-use, pedestrian, and hiker/stock trails). These wetlands proposed for disturbance are classified as riverine intermittent drainages. The total area of disturbance includes the footprint of development and an additional area associated with the construction work limits. Construction disturbance limits would be approximately 7.5 feet on either side of proposed development, including roadways, parking areas, and multi-use trails, and approximately 5 feet on either side of proposed pedestrian trails and hiker/stock trails.

To lessen the intensity of adverse impacts on wetlands, utilities would be installed using jack-and-bore construction techniques to the extent praticable. To avoid impacts in other sensitive areas, some underground utility lines would be abandoned in place. Appropriately sized culverts would be installed to accommodate flow, and other waters of the U.S. would be crossed using combinations of riprap, culverts, and channel lining to lessen the intensity of erosion and sedimentation.

With implementation of mitigation measures, the intensity of the adverse effects on wetlands would be reduced to minor. As described in Appendix C, Mitigation Measures Common to All Action Alternatives, measures that would protect wetlands during construction activities and minimize soil erosion during construction activities include, but are not limited to, spill prevention and pollution control measures, wetland protection and compensation measures (such as installing protective fencing material to protect wetlands from construction activities), using silt fencing to reduce erosion, working in wetlands during the low-flow season, avoiding wetlands to the extent feasible, and restoring habitats at a 1:1 ratio based on the acreage of wetlands disturbed.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor, adverse impact.

Enhancement-related Effects on Wetlands. Compared to Alternative 1, implementation of restoration actions under Alternative 2 would somewhat improve wetlands in the long term. These actions would result in a local, long-term, negligible to minor, beneficial impact.

As part of the restoration effort during Phase 3, revetments and a diversion dam along Yosemite Creek would be removed to restore overland flow across the Merced River floodplain. The National Park Service would revegetate denuded banks at and downstream of the confluence of Yosemite Creek and the Merced River, eradicate non-native plants, and re-establish a more natural stand of riparian forest and oak woodland on the floodplain. In the long term, restoration efforts would enhance highly valued resources, including palustrine and riverine wetland habitats. Restoration efforts would enrich species diversity, permit ecological processes, and improve wetland integrity, size, and continuity. In the short term, removal of revetments and the diversion dam could dislodge sediments into the creek, resulting in bank erosion, increased turbidity, adverse effects on aquatic species, and decreased water quality. These effects would be considered moderately adverse in the short term. Implementation of mitigation measures (including, but not limited to, implementing spill prevention and pollution control measures, using silt fencing for erosion and sediment control, and working in wetlands during the low-flow season), as described in Appendix C, Mitigation Measures Common to All Action Alternatives, would reduce the intensity of these effects to negligible. As a result, the overall restoration efforts would improve wetland size, integrity, and connectivity within the project area.

The landscape of the project site, including most above-ground drainages, would be revegetated based upon the principles described in the *Comprehensive Landscape and Revegetation Plan for Yosemite Lodge* (NPS 1999b). Existing and historic vegetation communities would be re-established and enhanced within the project area using an applied ecological approach to revegetation.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible to minor, beneficial impact.

Summary of Alternative 2 Impacts. Construction activities associated with Alternative 2, including installation and removal of utilities and development of project facilities, would have a moderate adverse impact due to disturbance of 0.43 acres of wetlands (specifically, riverine intermittent drainages). With implementation of mitigation measures (including wetland replacement, erosion control measures, spill prevention and pollution control measures, and wetland protection and compensation measures, such as installing protective fencing material to protect wetlands from construction activities, using silt fencing to reduce erosion, etc.), as described in Appendix C, Mitigation Measures Common to All Action Alternatives, construction impacts to wetlands would be lessened to a minor adverse effect. Overall, Alternative 2 would have a local, long-term, negligible to minor, beneficial impact on wetlands. The beneficial effects associated with restoration and revegetation under this alternative would offset the adverse construction-related impacts.

Cumulative Impacts

The cumulative impact analysis for wetlands under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1. Overall, the cumulative projects would have a regional, long-term, major, beneficial impact on Yosemite Valley wetlands associated with the comprehensive planning and restoration efforts.

Alternative 2 and the cumulative projects would result in a local, long-term, major, beneficial impact with respect to wetlands. The beneficial impacts associated with the restoration and revegetation efforts under Alternative 2 would positively contribute to the Valleywide restoration efforts.

Impairment

Alternative 2 would result in a local, long-term, negligible to minor, beneficial effect on wetlands and would therefore not impair wetland resources for future generations.

Vegetation

As discussed in Chapter III, Affected Environment, most of the project site has been previously disturbed, based on the presence of exposed bare ground, European annual grasses, and herbaceous species that favor disturbed open areas. Developed upland plant communities cover the largest area within the project site, with incense-cedar being the dominant plant species. Conifers (including incense-cedar and ponderosa pine) have invaded much of the project site due to modified hydrology and nearly 100 years of fire suppression. As a result, conifers have changed forests, meadows, and riparian areas from open, diverse communities to unnaturally large monocultures of shade-tolerant species.

Analysis

Construction-related Effects on Vegetation. Compared to Alternative 1, the size, integrity, and continuity of vegetation would be altered under Alternative 2 due to the removal of approximately 1,059 trees, which is 23% of existing trees in the project area. These trees would be removed primarily from developed plant communities for public safety, construction of facilities (Yosemite Lodge area, Camp 4 expansion area, Indian Cultural Center, and realigned Northside Drive), and view corridor and forest management,[2] resulting in a local, long-term, minor, adverse impact.

Alternative 2 would remove of trees in primarily developed open area–sparse vegetation, where ponderosa pine and incense-cedar trees are dominant. Trees in small stands of ponderosa pine and open ponderosa pine/California black oak woodland plant communities would also be removed. Twenty-four hazard trees (0.5% of existing trees in project area) would be removed for public safety. These trees are diseased or decaying and have been identified by the National Park Service as hazard trees. One hundred (2% of existing trees in project area) would be removed to maintain the historic view corridor. Most of these trees are located in the restoration area south of the relocated Northside Drive. Construction activities for development of facilities and Northside Drive would require removal of 641 trees (including 32 oaks, 38 maples, 142 pines, 323 incense-cedars, 14 firs, and 92 miscellaneous trees), which is 14% of existing trees in the project area (see Appendix B, Tree Management). Of these 641 trees, 6 trees would be removed

[2] Forest management includes removing colonizing trees from the restoration area in an effort to restore meadow habitat, which would include removal of non-native trees.

for expansion of Camp 4, and 6 trees would be removed for development of the Indian Cultural Center. The majority of trees removed would be incense-cedars. Forest management would require the removal of 294 conifers and miscellaneous trees (6% of existing trees in project area). The trees would be removed in an effort to restore meadow vegetation and reduce conifer encroachment. Removed trees that are infected with fungus root rot would be appropriately disposed.

Indirect, construction-related effects could include trampling in work areas, resulting in a moderate adverse effect on vegetation. Trampling could result in erosion, community fragmentation, soil and root compaction, and plant mortality at localized areas. Trampling effects could create favorable conditions for the introduction of invasive non-native plant species such as bull thistle. Invasive plant species could form monocultures and displace native plant species, and as a result change the species composition.

Trenching activities for utilities would occur in previously disturbed areas, thereby avoiding naturally occurring vegetation.

With implementation of mitigation measures (e.g., installing temporary fencing to protect remaining trees and highly sensitive biological resources, controlling and minimizing invasive non-native species, and implementing revegetation measures to restore disturbed areas), as described in Appendix C, Mitigation Measures Common to All Action Alternatives, tree removal activities within the project area would reduce conifer monocultures, eliminate non-native tree species and reduce their distribution, reduce the spread of fungus root rot, reduce conifer colonization due to fire suppression, and reduce fuel loads. Following tree removal, disturbed sites would be temporarily revegetated to prevent soil erosion and establishment of non-native species. Thereafter, disturbed sites, including those areas disturbed due to trenching activities, would be developed or permanently restored with native species.

Although the size of plant communities would be reduced and vegetation trampling could occur during construction, Alternative 2 would improve the integrity and continuity of the vegetation community in the long term by increasing species diversity within the project area. With implementation of mitigation measures (e.g., installing temporary fencing to protect remaining trees and highly sensitive biological resources), the intensity of this impact would remain minor.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, adverse impact.

Enhancement-related Effects on Vegetation. Compared to Alternative 1, restoration and revegetation would improve vegetation in the long term under Alternative 2, resulting in a local, long-term, negligible to minor, beneficial impact.

A total of 37.89 acres would be restored within three areas, including the area between the proposed realignment of Northside Drive at Yosemite Lodge and the Merced River (the site of former Yosemite Lodge cabins, Pine cottage, and employee housing), the area between the cabins and parking area on the Lodge site, and an area between Camp 4 and the Indian Cultural Center. As part of the restoration effort, California black oak woodland rehabilitation would be encouraged through plantings of California black oak seedlings. Restoration activities would include eradicating non-native Himalayan blackberry plants in the eastern portion of the Lodge site and non-native maple trees inhabiting the western portion of the Lodge site. Young conifer

proliferation would be discouraged by removing diversion dams and restoring overland flow across the Merced River floodplain, social trail decompaction, and prescribed burns. National Park Service staff would conduct low-intensity prescribed burns to discourage conifer invasion and support rehabilitation of California black oak woodlands and riparian forests. All of these efforts would enhance ecological processes and species diversity of California black oak woodland, meadows, and riparian communities, which are highly valued resources. The restoration effort would include vegetation monitoring to document restoration changes and inform resource management efforts.

The landscape of the Yosemite Lodge Area Redevelopment site would be revegetated based upon the principles described in the *Comprehensive Landscape and Revegetation Plan for Yosemite Lodge* (NPS 1999b). Existing and historic vegetation communities would be re-established and enhanced within the project area using an applied ecological approach to revegetation.

Implementation of restoration and revegetation efforts along with biological resource protection measures (e.g., installing temporary fencing to protect remaining trees and highly sensitive biological resources, controlling and minimizing invasive non-native species, implementing revegetation measures to restore disturbed areas), as described in Appendix C, Mitigation Measures Common to All Action Alternatives, would improve species diversity, link previously unconnected riparian and meadow vegetation, increase regeneration of California black oak, reduce conifer encroachment and the spread of non-native species, limit habitat fragmentation by removing trails and some roads, and minimize human-related effects, such as trampling, by restricting human activities to designated areas. These measures would improve the size, integrity, and continuity of vegetation in the long term.

Impact Significance After Mitigation Included in the Project. Local, long-term, , minor, beneficial impact.

Summary of Alternative 2 Impacts. Compared to Alternative 1, Alternative 2 would alter the size, integrity, and continuity of vegetation due to the removal of 1,059 trees and potential construction-related vegetation trampling effects, resulting in a local, long-term, minor, adverse impact. Implementation of biological resource protection measures (such as installing temporary fencing, controlling and minimizing invasive non-native species, and implementing revegetation measures to restore disturbed areas), as described in Appendix C, Mitigation Measures Common to All Action Alternatives, would somewhat offset this adverse effect although the impact would remain minor. Overall, Alternative 2 would have a local, long-term, negligible to minor, beneficial impact because the restoration and revegetation efforts would offset the adverse construction-related effect associated with tree removal.

Cumulative Impacts

The cumulative impact analysis for vegetation under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1. The cumulative projects would increase the size, connectivity, and integrity of vegetation within the project area, resulting in a regional, long-term, moderate, beneficial effect on vegetation.

Alternative 2 and the cumulative projects would result in a regional, long-term, moderate, beneficial impact with respect to vegetation, because efforts to restore and revegetate developed

and/or disturbed areas within the Valley and the project site would offset adverse impacts related to construction and increased development.

Impairment

Alternative 2 would have a local, long-term, negligible to minor, beneficial impact on vegetation and therefore would not impair vegetation resources for future generations.

Wildlife

As discussed in Chapter III, Affected Environment, the primary wildlife habitat type in the project area is urban. The high level of ongoing human disturbance, such as human presence and high noise levels from cars and buses, greatly reduces the value of urban habitat for local wildlife. The Yosemite Lodge as well as large portions of Northside Drive, Camp 4, and the Indian Cultural Center are located within urban habitat.

Analysis

Construction-related Effects on Wildlife. Construction activities associated with Alternative 2 would result in a local, short- and long-term but temporary, moderate, adverse impact to wildlife. Activities that decrease the amount and distribution of wildlife habitat or the size, connectivity, or integrity of wildlife habitat would adversely affect wildlife. Project activities that increase habituation of wildlife to humans, cause incidental mortality of wildlife species, or disrupt breeding or foraging behavior would also adversely affect wildlife.

The Yosemite Lodge Area Redevelopment would occur in three phases, with varying degrees of intensity and in varying locations. As described in the analysis of project effects on vegetation, a total of 1,059 trees would be removed. Maximum construction crew sizes would range from 80 to 90 individuals in Phase 1 to 30 individuals in Phase 3. Phase 1 construction would occur over a two-year period and have the most intense adverse effect on wildlife of the three phases. Phase 1 would include a majority of the demolition and construction within the Yosemite Lodge area and the construction of the realigned Northside Drive. During this phase, the removal of trees or snags could affect breeding birds or bats by destroying nests or causing injury or mortality to individuals. Noise and human disturbance during construction activities adjacent to active bird nests or bat roosts could result in the harassment of adults or loss of young. During site grading and excavation, small mammals could become entrapped in trenches or pits.

Phase 2 would occur over a ten-year period and would include construction and demolition activities at Yosemite Lodge and Camp 4 and the construction of the Indian Cultural Center. The intensity of Phase 2 adverse impacts would be less than that under Phase 1, with fewer construction crews and less heavy equipment. The Indian Cultural Center would be constructed using traditional methods and hand tools, thus decreasing adverse noise and disturbance effects on wildlife.

Phase 1 and Phase 2 project activities would occur primarily within the disturbed footprint of the Yosemite Lodge area or within areas subject to ongoing foot traffic and other human disturbance (e.g., Indian Cultural Center), limiting the adverse effect on wildlife. In addition, implementation of preconstruction wildlife surveys, avoidance of construction activities adjacent to active bird nests and bat roosts during the breeding season, food and waste removal, and other measures (see Appendix C, Mitigation Measures Common to All Action Alternatives) during both Phase 1 and Phase 2 would further reduce the magnitude of construction-related effects on wildlife to minor.

Phase 3 would occur over a three-year period and would include restoration and revegetation activities between Camp 4 and the Valley Loop Trail and between the Yosemite Lodge and the Merced River as well as removal of the Yosemite Creek diversion dam. Restoration and revegetation activities would involve small construction crews and less equipment than Phase 1 and Phase 2 activities. Phase 3 activities would be confined to seasonal disturbance. During this phase, human activities and construction noise adjacent to active bird nests or bat roosts could adversely affect these wildlife species and result in nest/roost abandonment and loss of young and reproductive potential. Operation of heavy equipment could result in mortality of amphibians, reptiles, and small mammals. Smaller wildlife species could become entrapped in pipes or other restoration materials. Removal of the Yosemite Creek diversion dam could temporarily increase sediment levels in the Merced River and Yosemite Creek and adversely affect aquatic wildlife by decreasing water quality in these habitats resulting in minor to moderate adverse effects on wildlife. Implementation of mitigation measures, such as preconstruction wildlife surveys and erosion and sedimentation control measures (see Appendix C, Mitigation Measures Common to All Action Alternatives), would reduce the magnitude of Phase 3 effects on wildlife to minor.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor, adverse impact.

Construction-related Effects on Black Bears. During construction of all three phases of Alternative 2, black bears could be attracted to worksites by the increased availability of food waste from construction crews. This minor adverse effect could occur more frequently during periods of intensive activity, especially during Phase 1. Food left by visitors currently attracts black bears to the Yosemite Lodge Area Redevelopment site. The implementation of food and waste removal and other measures (see Appendix C, Mitigation Measures Common to All Action Alternatives) would reduce construction-related effects on black bears. With implementation of these measures, the accidental attraction of bears to the worksite would not increase substantially during the construction of Alternative 2. The accidental attraction of black bears to the worksite would be considered a long-term but temporary, negligible effect of the project.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, negligible, adverse impact.

Operation-related Effects on Wildlife. Under Alternative 2, development of new lodging at Yosemite Lodge, the expansion of Camp 4, and the creation of the Indian Cultural Center would continue to fragment habitat and increase human presence in currently disturbed areas, as described under Alternative 1, as well as in some adjacent undisturbed areas. Realigned Northside Drive would fragment upland habitat and subject wildlife to traffic noise, lights, and moving vehicles. An indirect adverse effect of the riparian and meadow restoration between Yosemite Lodge and the Merced River could be an increase in water levels that could favor bullfrogs.

In the long term, restoration and revegetation of the project site would have a beneficial effect on wildlife and highly valued resources, which include the river ecosystem and riparian communities associated with the Merced River. In the Sierra Nevada, more species and greater numbers of wildlife are found in riparian habitats than in any other habitat. Species that rely on diversity and connectivity of habitats, such as black phoebes, Cooper's hawks, and Pacific tree frogs, would benefit from these activities, although much of these areas would continue to be affected by adjacent human use and the realignment of Northside Drive. Modification of Northside Drive to a multi-use paved trail would reduce traffic disturbance to upland habitats and wildlife north of

Yosemite Lodge. In addition, removal of the Yosemite Creek diversion dam would benefit aquatic wildlife by restoring the natural hydrology of the area. Overall, Alternative 2 would result in a local, long-term, negligible, beneficial impact to wildlife and highly valued resources compared to Alternative 1.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible, beneficial impact.

Operation-related Effects on Black Bears. Under Alternative 2, habitat fragmentation and increased human presence could adversely affect black bears as well as other wildlife. In addition, the expansion of additional campsites, construction of gear lockers, and installation of a cooking pavilion at Camp 4 have the potential to attract black bears to the project area. These facilities would increase the amount of food waste available, the conditioning of black bears to human food, and the number of human/bear conflicts within the Valley. This moderate adverse effect could occur more frequently during periods of heavy visitation to the Valley.

The implementation of food enforcement measures, food and waste removal, cleaning of the cooking pavilion on a nightly basis, and other measures (see Appendix C, Mitigation Measures Common to All Action Alternatives) would reduce operation-related effects on black bears. An operational plan would be developed to outline use and maintenance of the cooking pavilion. If necessary to reduce human/bear conflicts, use of the cooking pavilion would be restricted and no cooking would be permitted at the facility. In addition, the Bear Management Council would review designs for gear lockers and the cooking pavilion to ensure that their use would not increase adverse impacts to black bears. With implementation of these measures, the accidental attraction of black bears to the project area and increased human/bear conflicts would be considered a long-term, moderate, adverse effect.

Impact Significance After Mitigation Included in the Project. Local, long-term, moderate, adverse impact.

Summary of Alternative 2 Impacts. Construction-related activities would have a minor to moderate adverse effect on wildlife through habitat disturbance (including tree removal), noise, human presence, and operation of heavy equipment. Implementation of mitigation measures, such as preconstruction wildlife surveys and erosion and sedimentation control measures (see Appendix C, Mitigation Measures Common to All Action Alternatives), would reduce the magnitude of construction-related adverse effects on wildlife to minor. Moderate, adverse, operation-related effects on wildlife would occur through habitat fragmentation, increased human presence, expansion of development into undeveloped areas, and creation of facilities that could attract black bears to the project site. Food waste control and other measures developed in coordination with the Bear Management Council would reduce the severity of this adverse effect. The beneficial effects on wildlife and highly valued resources due to riparian and meadow habitat restoration activities, modification of Northside Drive into a multi-use paved trail, and restoration of the natural hydrology of Yosemite Creek would somewhat offset but not reduce the intensity of the adverse construction- and operation-related impacts associated with Alternative 2. Overall, Alternative 2 would have a local, long-term, moderate, adverse effect on wildlife.

Cumulative Impacts

The cumulative impact analysis for wildlife under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1. Overall, the cumulative projects would have a regional, long-term, moderate, beneficial effect on wildlife. The beneficial effects of the restoration efforts in Yosemite Valley would offset the adverse effects associated with development projects and construction activities.

Alternative 2 and the cumulative projects would result in a local, long-term, moderate, beneficial impact on wildlife because of the overall emphasis on restoring disturbed or developed land to natural conditions and improving the health of ecosystems. These beneficial effects would outweigh the adverse effects associated construction-related activities and new development under Alternative 2 and the cumulative development projects.

Impairment

Alternative 2 would result in a local, long-term, moderate, adverse impact to wildlife at the Yosemite Lodge Area Redevelopment site due to habitat fragmentation, noise, human presence, and other use-associated effects. The adverse effect of this alternative on wildlife would be primarily localized and would not be considered severe. The local adverse impact to wildlife would not be of sufficient magnitude or nature to impair the integrity of wildlife resources in the park for future generations.

Special-status Species

As discussed in Chapter III, Affected Environment, Yosemite Lodge as well as large portions of Northside Drive, Camp 4, and the Indian Cultural Center are located within urban habitat. The high level of ongoing human disturbance, such as human presence and high noise levels from cars and buses, greatly reduces the value of urban habitat for special-status species.

Analysis

Special-status species known to occur or with potential to occur in the immediate vicinity of the Yosemite Lodge area, Camp 4, Northside Drive, Indian Cultural Center site, Yosemite Creek Bridge, and Yosemite Creek Pedestrian/Bicycle Bridge include bald eagle, Yosemite Mariposa sideband snail, Sierra pygmy grasshopper, Harlequin duck, peregrine falcon, white-headed woodpecker, rufous hummingbird, California spotted owl, golden eagle, Cooper's hawk, sharp-shinned hawk, willow flycatcher, yellow warbler, 10 species of bats, and 8 special-status plant species (refer to Chapter III, Affected Environment, and Appendix D, Special-status Species Evaluation, for additional information).

Construction activities associated with Alternative 2 would result in a local, short- and long-term but temporary, minor, adverse impact to special-status species. Activities that decrease the amount and distribution of special-status species habitat or the size, connectivity, or integrity of such habitat would adversely affect special-status species. Project activities that cause incidental mortality of special-status species or disrupt breeding or foraging behavior would also adversely affect special-status species.

Adverse operation-related effects of Alternative 2 include a reduction in the amount and distribution of special-status species habitat or the size, connectivity, or integrity of special-status species habitat and the disruption of breeding or foraging behavior. Beneficial operation-related

effects of Alternative 2 include Phase 3 restoration and revegetation efforts, which would improve habitat for special-status species. Special-status species habitat, in particular riparian and meadow habitat, is considered sensitive wildlife habitat and a highly valued resource.

Construction-related Effects on Special-status Species of Birds. Construction activities associated with Alternative 2 would occur in three phases, with varying degrees of intensity and in varying locations. As described in the analysis of project effects on vegetation, a total of 1,059 trees would be removed. Construction crews would range in size from 80 to 90 individuals in Phase 1 to 30 individuals in Phase 3. Phase 1 construction would occur over a two-year period and have the most intense adverse effect on special-status birds of the three phases. During this phase, removal of trees or snags would adversely affect California spotted owl, Cooper's hawk, and sharp-shinned hawk breeding or foraging within the Yosemite Lodge or realigned Northside Drive areas. Construction activities, heavy equipment movement, and general activity and noise adjacent to active bird nests could result in the harassment of adults and loss of young, resulting in a readily apparent, moderate, adverse impact. Impacts to breeding birds would be decreased to a negligible intensity through implementation of mitigation measures, such as preconstruction surveys, avoidance of construction activities adjacent to active special-status bird nests during the breeding season, and potential nest monitoring (see Appendix C, Mitigation Measures Common to All Action Alternatives). With implementation of these measures, tree removal for the realigned Northside Drive construction would have a negligible to minor adverse effect on bald eagle, golden eagle, peregrine falcon, white-headed woodpecker, and rufous hummingbird foraging habitat. Removal of Yosemite Lodge cabins between the Lodge and the Merced River would reduce riparian habitat fragmentation and provide a slight beneficial impact to Harlequin duck, willow flycatcher, and yellow warbler.

Phase 2 construction would occur over a 10-year period and include activities at the Yosemite Lodge area and Camp 4, the modification of Northside Drive into a multi-use paved trail, and the construction of the Indian Cultural Center. Potential impacts to special-status birds would be readily apparent and would include harassment of adults, loss of young in breeding birds, and reduction in foraging habitat. Phase 2 adverse impacts would be less intense than Phase 1 impacts, with fewer construction crews and less equipment. Phase 1 and Phase 2 project activities would occur primarily within the disturbed footprint of the Yosemite Lodge area or within areas subject to ongoing foot traffic and other human disturbance (e.g., the Indian Cultural Center), which would limit the adverse impact to special-status species. The Indian Cultural Center would be constructed using traditional methods and hand tools to decrease adverse impacts to wildlife in the disturbance area. Phase 2 construction would have a moderate adverse impact due to the disturbance of nesting birds.

Phase 3 removal of the Yosemite Creek diversion dam and restoration and revegetation activities between Camp 4 and the Valley Loop Trail and between Yosemite Lodge and the Merced River would involve small construction crews and less equipment than Phase 1 and Phase 2 activities. Phase 3 activities would be confined to seasonal disturbance. Human activity and construction noise could result in nest abandonment or loss of young and reproductive potential, resulting in a readily apparent adverse effect on yellow warbler and Harlequin duck. Although the Merced River riparian corridor provides low-quality habitat for willow flycatcher, this species has not been observed nesting in the Valley for 30 years and is not likely to be affected by Phase 3 activities.

The implementation of preconstruction surveys for breeding birds, potential nest monitoring, and other measures during all three phases of construction (see Appendix C, Mitigation Measures Common to All Action Alternatives) would reduce construction-related effects on special-status bird species. With mitigation, construction-related activities would have a local, long-term but temporary, negligible, adverse effect on special-status birds. Preconstruction surveys would identify any special-status bird species nesting within or adjacent to construction areas. Nest monitoring would ensure that activities with the potential to disturb nesting special-status birds do not occur adjacent to active special-status bird nests during the nesting season.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, negligible, adverse impact.

Construction-related Effects on Special-status Species of Bats. Phase 1 building demolition of Yosemite Lodge cabins would adversely affect special-status bats roosting in these structures. Phase 1 and 2 tree removal would adversely affect special-status species of bats roosting in trees or snags within the Yosemite Lodge area, Camp 4, realigned Northside Drive, and the Indian Cultural Center through habitat removal or noise disturbance. Phase 3 would disturb foraging habitat for special-status species of bats located in the restoration and revegetation areas between the Valley Loop Trail and Camp 4 and between the Yosemite Lodge area and the Merced River. Disturbance of roosting bats and foraging habitat would be a readily apparent, moderate, adverse impact.

Building demolition and tree and snag removal would occur during the period when neither maternity nor hibernation colonies are likely (generally April through May and August through October). If building demolition or tree removal are slated to occur outside of these months, structures and trees/snags would be evaluated for bats prior to construction. If bats are detected during reproduction or hibernation periods, demolition or tree/snag removal would be delayed until the bats can be excluded from the structure by a qualified bat biologist in a manner that does not adversely affect their survival or that of their young. These measures (see Appendix C, Mitigation Measures Common to All Action Alternatives) would reduce the magnitude of the adverse effects to bats during construction of Alternative 2 to negligible, due to avoidance of bats during sensitive life stages.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, negligible, adverse impact.

Construction-related Effects on Yosemite Mariposa Sideband Snail. Activities associated with the construction of the Indian Cultural Center in rockslide habitat during Phase 2 would result in a slightly detectable, short-term, minor, adverse effect on Yosemite Mariposa sideband snail through habitat removal and human trampling. Phase 2 is not scheduled to occur until fall 2006. Measures to prevent adverse effects on this species (see Appendix C, Mitigation Measures Common to All Action Alternatives) would include preconstruction surveys during the appropriate time of year to identify Yosemite Mariposa sideband snails within the Indian Cultural Center site, the avoidance of occupied habitat, and dust abatement measures for activities adjacent to rockslide habitat occupied by the snail. With mitigation measures, Alternative 2 would have a negligible to minor adverse effect on this species, due to avoidance of habitat that supports this species and prevention of disturbance to the species during construction.

Impact Significance After Mitigation Included in the Project. Local, short-term, negligible to minor, adverse impact.

Construction-related Effects on Sierra Pygmy Grasshopper. The Sierra pygmy grasshopper is thought to be associated with riparian and meadow habitats (Arnold 2003). Activities associated with Phase 3 restoration and revegetation of the Merced River riparian and meadow habitat would result in a slightly detectable, short-term, minor, adverse effect on Sierra pygmy grasshopper through human and vehicle disturbance. Measures to prevent adverse effects on this species include preconstruction surveys to determine its presence in areas of suitable habitat along the Merced River and avoidance of occupied habitat. With mitigation measures, Alternative 2 would have a negligible to minor adverse effect on this species, due to avoidance of habitat that supports this species and prevention of disturbance to the species during construction.

Impact Significance After Mitigation Included in the Project. Local, short-term, negligible to minor, adverse impact.

Construction-related Effects on Special-status Plants. Special-status plant species known or likely to occur in the vicinity of the Yosemite Lodge Area Redevelopment site include Rawson's flaming-trumpet, Madera linanthus, slender-stalked monkeyflower, Yosemite popcorn-flower, sugar stick, northern bedstraw, false pimpernel, and ladies' tresses. Human and vehicle disturbance of upland habitat during Phase 1 and Phase 2 construction in the Yosemite Lodge, Camp 4, and Indian Cultural Center areas, and potential disturbance associated with Phase 3 riparian and meadow restoration activities along the Merced River would result in a slightly detectable, minor, adverse impact to these species. Measures such as preconstruction surveys during the appropriate time of year and avoidance of special-status plant populations where feasible (see Appendix C, Mitigation Measures Common to All Action Alternatives) would reduce adverse effects on special-status plant species. With the implementation of these measures, Alternative 2 would have a negligible to minor adverse effect on these vegetation species, due to avoidance of special-status plants and protection of special-status plants during construction.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, negligible to minor, adverse impact.

Operation-related Effects on Special-status Species of Birds. Under Alternative 2, development of new lodging at Yosemite Lodge and the creation of the Indian Cultural Center would not fragment upland habitat for California spotted owl, Cooper's hawk, and sharp-shinned hawk or increase human presence in these areas substantially more than would occur under Alternative 1. Due to the disturbed nature of the majority of the Yosemite Lodge Area Redevelopment site and the existing high degree of human use of the area, operation-related effects on special-status bird species would continue to be moderate and adverse, as under Alternative 1. Realigned Northside Drive would increase fragmentation of upland habitat for special-status bird species and subject special-status birds in adjacent upland habitat to traffic noise, lights, and moving vehicles. Alternative 2 would also increase fragmentation of foraging habitat for bald eagle, golden eagle, peregrine falcon, white-headed woodpecker, and rufous hummingbird in the vicinities of Yosemite Lodge, Camp 4, the Indian Cultural Center, and realigned Northside Drive.

In the long term, restoration and revegetation efforts, including restoration of hydrology in the Yosemite Creek and Merced River floodplain through removal of the diversion dam, would have a beneficial effect on special-status bird species. Although much of these areas would continue to be affected by adjacent human use and the rerouting of Northside Drive, restoration and revegetation efforts would have a beneficial effect on bald eagle, golden eagle, peregrine falcon, white-headed woodpecker, and rufous hummingbird foraging habitat and on riparian breeding habitat for Harlequin duck, willow flycatcher, and yellow warbler. Modification of Northside Drive to a multi-use paved trail would reduce traffic disturbance in upland habitats north of Yosemite Lodge. Exclusion of motor vehicles from Northside Drive would improve habitat quality for California spotted owls in areas adjacent to the road. Overall, operation of Alternative 2 would result in a local, long-term, negligible, beneficial impact to special-status bird species compared to Alternative 1.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible, beneficial impact.

Operation-related Effects on Special-status Species of Bats. Development of new lodging at Yosemite Lodge and the creation of the Indian Cultural Center would not fragment upland habitat for bats substantially more than would occur under Alternative 1. Due to the disturbed nature of the majority of the project area and the existing high degree of human use of the area, operation-related effects on special-status bat species would be minor and adverse. Realigned Northside Drive would also increase fragmentation of habitat for these species and subject bats in adjacent habitat to traffic noise, lights, and moving vehicles. Removal of motor vehicles from Northside Drive would reduce human disturbance in this area and have a beneficial effect on bats. Increasing the amount and improving the quality of high-value habitat in the Yosemite Lodge area, Camp 4, and the restoration and revegetation areas would restore the natural mosaic of habitats, providing better contiguity and connections within and among habitat types and improving the ability of natural processes to maintain habitat quality. Although Alternative 2 would fragment habitat for bats in some locations, remove some structures suitable for roosting, and result in some new development in upland forest habitats, this alternative would have a slightly apparent beneficial effect on bats through restoration of upland, riparian, and wetland habitats that support foraging and breeding and removal of vehicle traffic from upland forest habitats.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, beneficial impact.

Operation-related Effects on Yosemite Mariposa Sideband Snail. The operation of the Indian Cultural Center would displace potential habitat for the Yosemite Mariposa sideband snail and introduce additional human disturbance into this area. Due to current levels of human disturbance and foot traffic already present at the proposed Indian Cultural Center site, operation of Alternative 2 would result in a negligible to minor effect on this species.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible to minor, adverse impact.

Operation-related Effects on Sierra Pygmy Grasshopper. Restoration activities would have a negligible beneficial effect on the Sierra pygmy grasshopper through localized restoration of riparian habitat and the creation of suitable habitat for this species along the Merced River and Yosemite Creek.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible, beneficial impact.

Operation-related Effects on Special-status Plants. Revegetation of large portions of upland habitat between the Valley Loop Trail and Camp 4, restoration of potentially wet meadows and riparian habitat between the Yosemite Lodge area and the Merced River, and restoration of the natural hydrology of Yosemite Creek through removal of the Yosemite Creek diversion dam would result in a slightly apparent beneficial effect to special-status plant species.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible to minor, beneficial impact.

Summary of Alternative 2 Impacts. Construction-related activities would have a minor to moderate adverse effect on special-status species through habitat disturbance (including tree removal), noise, human presence, and operation of heavy equipment. Implementation of mitigation measures, such as preconstruction surveys, nest monitoring, and avoidance of special-status species and occupied habitat wherever feasible (see Appendix C, Mitigation Measures Common to All Action Alternatives), would reduce the magnitude of the adverse construction-related effects on special-status species. The beneficial effects to special-status species and highly valued resources due to riparian and meadow habitat restoration activities, modification of Northside Drive into a multi-use paved trail, and restoration of the natural hydrology of Yosemite Creek would offset the adverse construction- and development-related effects associated with Alternative 2. Overall, Alternative 2 would have a local, long-term, negligible, beneficial effect on special-status species.

Cumulative Impacts

The cumulative impact analysis for special-status species under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Overall, past, present, and reasonably foreseeable future projects considered in conjunction with Alternative 2 would have a regional, long-term, moderate, beneficial effect on special-status species and their habitats, primarily due to the beneficial effects associated with implementation of large-scale planning efforts that would protect and restore highly valued resource habitats in Yosemite Valley. These restoration efforts would compliment actions under this alternative, which would restore areas of upland, meadow, and riparian habitats that are important to many special-status species.

Impairment

Alternative 2 would result in a local, long-term, negligible, beneficial impact to special-status species at the Yosemite Lodge Area Redevelopment site. Since Alternative 2 would have an overall beneficial effect, this alternative would not impair special-status species for future generations.

Air Quality

Analysis

Construction Emissions. The 3-phase construction effort for Alternative 2 would have local, short- and long-term but temporary impacts to air quality over the 13-year period from spring 2004 through fall 2016. Air quality effects associated with the demolition of existing structures and construction of new facilities under Alternative 2 include temporary engine and dust emissions from a variety of sources. Demolition and construction activities under Alternative 2 would generate considerable amounts of dust, including particulates with a diameter of 10 microns or less (primarily fugitive dust from demolition activities and tailpipe emissions from the operation of heavy-duty equipment). Dust emissions generated by various demolition and construction activities would vary from day to day, depending on the level and type of activity, silt content of the soil, and weather conditions.

Emissions generated from construction and demolition activities would also include tailpipe emissions from heavy-duty equipment, worker commute trips, and truck trips (to haul away debris materials from demolition sites to appropriate reuse or refuse sites and to supply construction sites with new construction materials). Both mobile and stationary equipment would generate emissions of ozone precursors, carbon monoxide, and particulates with a diameter of 10 microns or less (criteria air pollutants), as well as toxic air contaminants from use of diesel-powered equipment. Toxic air contaminants are less pervasive in the atmosphere than criteria air pollutants and do not have corresponding ambient air quality standards, but they are nonetheless linked to short-term (acute) and long-term (chronic or carcinogenic) adverse human health effects.

The intensity and nature of the construction activity would vary over the 13-year construction period, and the range of adverse impacts to local air quality would similarly vary. Construction activity would not occur continuously during the entire 13-year period. Rather, intensive Phase 1 construction would occur at the Lodge for a two-year period, followed by a several-year period of construction inactivity at the site. Subsequently, the construction of Camp 4 and the Indian Cultural Center during Phase 2 as well as restoration and revegetation activity during Phase 3 would occur during an intensive two- to three-year construction period, also followed by a several-year period of construction inactivity. Finally, intensive Phase 2 construction activity at the Lodge would occur over an approximately two-year period, concluding in fall 2016. During the multiple-year periods of construction inactivity, the Yosemite Lodge Area Redevelopment site would be fully functioning.

During intense construction periods at Yosemite Lodge and Camp 4, there would be local, short- and long-term but temporary, moderate, adverse impacts to air quality. Construction activities would generate emissions of criteria air pollutants, including particulate matter of 10 microns or less, and toxic air contaminants from building and parking demolition, new building construction, existing building renovation, paving activities, trail removal and development, utility removal and installation, culvert installation, and removal of approximately 1,059 trees. Emissions generated by construction-related truck trips (up to 1,020 over the two-year period of Phase 1, with the number of daily trips varying) and worker commute trips (generated by as many as 80 to 90 construction personnel commuting in 7 to 10 shuttle vans) would also adversely affect local air quality.

Less intensive construction efforts would include the construction of the Indian Cultural Center, revegetation efforts north of Camp 4 and south of the Valley Loop Trail, and restoration of approximately 37.89 acres of the project area, including the removal of a diversion dam and revetments along Yosemite Creek. (Removal of approximately 294 trees associated with forest management practices was included in the analysis of intense construction activities, described above.) Activities associated with less intensive construction efforts at these sites would have local, short- and long-term but temporary, minor, adverse impacts to air quality. Approximately 30 construction workers, 100 concrete and other truck trips, and operation of heavy equipment – predominantly at the Indian Cultural Center site for construction of the proposed community building – would generate pollutant emissions. Local air quality at the project site would be minimally affected.

As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, measures to mitigate adverse construction-related impacts to air quality would be implemented as part of this alternative. These measures include practices such as site watering, covering stockpiles, covering haul trucks, vehicle emission controls, and locating stationary emission sources as far from recreational areas as possible in order to reduce both tailpipe and fugitive dust emissions. With mitigation measures, the effect of air pollutant emissions associated with demolition and construction activities at the project site under Alternative 2 would be negligible to minor, depending on the intensity of construction activities taking place during the three-phase construction period and the proximity to recreational uses and overnight accommodations.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, negligible to minor, adverse impact.

Nonvehicle Operational Emissions. Operation of the Yosemite Lodge Area Redevelopment site under Alternative 2 would result in a slight increase in emissions of reactive organic gases compared to Alternative 1. Although the total campsites at Camp 4 would be expanded from 38 to 65, there would be only one fire ring for every two campsites (33 campsite fire rings, in total), compared to the existing 38 fire rings at Camp 4. Camp 4 would also have one group fire ring in the cooking pavilion, offering campers an alternative to building their own campfires. A fire circle would also be added to the Lodge amphitheater for evening events. Periodic low-intensity prescribed burns would occur as part of the restoration effort. In addition, one outdoor fire pit would be included in the design of the Indian Cultural Center for special events.

With the expansion of the Lodge from 245 units to 251 units and the development of the Indian Cultural Center, there would be a negligible increase of emissions associated with cooking and the burning of propane for space and water heating compared to Alternative 1. The slight increase in emissions from increased propane consumption would be imperceptible. Therefore, Alternative 2 would have a local, long-term, negligible, adverse impact to air quality compared to Alternative 1, due to the potentially noticeable increase of smoke from wood fires and the associated pollutants, including reactive organic gas emissions.

Impact Significance. Local, long-term, negligible, adverse impact.

Vehicle Operational Emissions. Emissions associated with traffic flow in the Yosemite Lodge Area Redevelopment site would decrease on days in which high traffic volumes occur in the Valley, while emissions from trips to and from the Valley would remain unchanged compared to Alternative 1.

Emissions associated with local vehicle trips would decrease considerably due to traffic flow improvements along Northside Drive and the interior roadway system of the site, and due to the incorporation of features that promote alternative transportation modes into the project design. The rerouting of Northside Drive and the design of the Yosemite Lodge interior roadway loop system would improve vehicle traffic flow on Northside Drive and in parking lots, with features such as separate roadways for entering and exiting vehicles, separate parking areas for guest vehicles and overnight buses, bus turnouts to reduce vehicle and bus conflicts, and directional signs to improve wayfinding for park visitors. The design of the Yosemite Lodge interior roadway loop system would minimize ingress/egress points onto realigned Northside Drive, and parking spaces would no longer line the Lodge entry roadway as occurs under Alternative 1. These design features would result in an overall improvement in the level of service (from F to A) along the rerouted road segment near the Lodge. In addition, paved parking lots at Camp 4 (approximately 69,600 square feet) under Alternative 2 would reduce particulate matter emissions (dust) generated by vehicles using the parking lot.

Various design features of the Yosemite Lodge site under Alternative 2 would encourage use of alternative modes of transportation and circulation, creating an environment that is more conducive to walking and bicycling compared to Alternative 1. Such design features include new shuttle bus stops at the Lodge and Camp 4, improved trail signage for wayfinding, roundabouts on the rerouted Northside Drive, and secure bicycle racks at locations dispersed throughout the Lodge site, including 130 bicycle racks at Camp 4. The rerouting of Northside Drive would reduce conflicts between vehicles and pedestrians and provide safer pedestrian access between the Lodge and Yosemite Falls. In addition, the existing segment of Northside Drive between the roundabout and the western connection of realigned Northside Drive would be converted to a multi-use paved trail. These features would reduce vehicle emissions to the extent that they would encourage alternative modes of transportation for intra-Valley transport.

More trips to and from the Valley would be generated under Alternative 2, but the increase in associated emissions would be offset by the beneficial effects related to improved traffic flow at the site. Under Alternative 2, the number of trips to and from the Valley and associated emissions would increase by a negligible amount due to the development of the Indian Cultural Center, the increased capacity of the Lodge (6 additional units), and the expansion of Camp 4 (27 additional campsites). Trips to and from the Valley would also increase if the existing modular employee housing (82 beds) and employee cabins (8 beds) were moved to a location outside the Valley. The potential increase in vehicle trips related to employees commuting from locations outside of the Valley would be relatively small in comparison to the total traffic volume in the Valley. Increased storage capacity at the new housekeeping/maintenance building (for furniture, equipment, and food) would partially offset this increase in trips to and from the Valley by allowing for less frequent truck supply trips. Therefore, the increase in emissions from vehicle trips to and from the Valley associated with operation of the Lodge and Camp 4 under Alternative 2 would be imperceptible.

The design features implemented under Alternative 2 would result in a detectable decrease in the amount of vehicle emissions, especially on busy days, resulting in a moderate beneficial effect on local air quality compared to Alternative 1. When considered with the increase in emissions associated with new vehicle trips, Alternative 2 would have an overall minor beneficial impact.

Impact Significance. Local, long-term, minor, beneficial impact.

Summary of Alternative 2 Impacts. Construction activities associated with Alternative 2 would have a minor to moderate, adverse effect on air quality. As described in Appendix C, Mitigation Measures Common to All Action Alternatives, implementation of practices such as watering, covering stockpiles, and covering haul trucks would reduce the intensity of the adverse construction-related emissions to negligible to minor. Overall, Alternative 2 would have a local, long-term, negligible, beneficial effect on air quality associated with the substantial decrease in the amount of vehicle emissions on busy days. The beneficial operational effects would offset the long-term but temporary adverse effects to air quality associated with demolition and construction activities and increased nonvehicle operational emissions.

Cumulative Impacts

The cumulative impact analysis for air quality under Alternative 2 is the same as described under Alternative 1. See the description of cumulative effects under Alternative 1.

Alternative 2 and the cumulative projects would result in a regional, long-term, minor, beneficial effect on air quality. The minor beneficial effects of Alternative 2 associated with reduced nonvehicle operational emissions and vehicle emissions would contribute to the overall beneficial effects of the cumulative projects.

Impairment

Implementation of Alternative 2 would result in a local, long-term, minor, beneficial impact to air quality. As a result, this alternative would not impair air quality.

Noise

Analysis

Construction Noise. Implementation of Alternative 2 would include demolition of existing structures and construction of new facilities over a three-phase, 13-year period, from spring 2004 through fall 2016. The type of noise generated during this period would be construction-related and would include the operation of heavy equipment, voices of construction workers, and noise associated with material haul vehicles and worker commute trips; such noise could affect nearby campers at Camp 4, guests staying at the Lodge, visitors to the Indian Cultural Center, and recreational users on trails, in nearby meadows, or in the Lower Yosemite Fall area. Table IV-1 provides typical noise levels generated by various types of heavy equipment that would be used during implementation of Alternative 2.

Operation of heavy equipment could generate substantial amounts of noise at various locations on the project site and could occur within close proximity to nearby recreational uses, campsites, or overnight lodging facilities. Noise effects in the project area would vary depending upon a number of factors, such as the number and types of equipment in operation on a given day, usage rates, the level of background noise in the area, and the distance between sensitive uses and

Table IV-1
Typical Noise Levels from Heavy-duty Equipment

Equipment	Typical Noise Level (dBA) 50 feet from the Source[a]	
	Without Noise Controls	With Feasible Noise Controls[b]
Air Compressor	81	75
Backhoe	80	75
Concrete Mixer	85	75
Concrete Pump	82	75
Crane, Derrick	88	75
Crane, Mobile	83	75
Dozer	80	75
Front Loader	79	75
Generator	78	75
Grader	85	75
Jack Hammer	88	75
Paver	89	80
Pneumatic Tool	86	80
Pump	76	75
Rock Drill	98	80
Saw	78	75
Scraper	88	80
Truck	91	75

dBA = A-weighted decibels

[a] Estimates correspond to a distance of 50 feet from the noisiest piece of equipment and 200 feet from the other equipment.
[b] Controls may include selecting quieter procedures or machines as well as implementing noise-control features that do not require major redesign or extreme cost (e.g., improved mufflers, equipment redesign, engine enclosures, or use of silencers, shields, shrouds, or ducts).

SOURCE: U.S. Environmental Protection Agency, 1971

demolition or construction activities. The location of construction-related noise sources would vary based on the activity being performed. Substantial noise impacts are anticipated in the vicinity of the primary staging area, located at the existing parking lot adjacent to the new cottages, cabins, and other buildings, and in the vicinity of the secondary staging area for utility and paving equipment, located near the proposed overnight bus parking area.

Outdoor ambient noise levels in Yosemite Valley typically range from the 60 to 65 dBA (NPS 2001b). This analysis conservatively assumes the ambient noise level in outdoor areas of moderate human activity such as Camp 4 and the Lodge to be 60 dBA. An outdoor ambient noise level of 60 dBA corresponds to a reasonable indoor noise standard of 45 dBA, because most buildings attenuate at least 15 dBA of sound.

Many demolition and construction activities would occur in close proximity to sensitive receptors, including outdoor recreational users and guests staying in the Lodge units. For instance, guests staying at the Azalea cottage would be exposed to noise from Phase 1 activities, including the demolition of the Birch cottage (approximately 75 feet away), the construction of five new cottages (as close as 50 feet away), construction of the housekeeping, maintenance, and storage facilities (as close as 100 feet), construction of the bicycle rental facility (approximately 25 feet away), construction of parking lots and nearby roads (as close as 25 feet), and the conversion of existing Northside Drive to a multi-use paved trail (as close as 100 feet). Operation of heavy-duty equipment without noise controls as part of these activities would increase ambient noise levels at Azalea by more than 9 dBA, resulting in a major adverse impact to the noise

environment at this location. Even with appropriate noise controls installed on construction equipment (identified in Appendix C, Mitigation Measures Common to All Action Alternatives), noise from demolition and construction activity within 100 feet of Azalea would cause a major adverse noise impact, because it would result in outdoor noise levels of 69 dBA or higher at Azalea (and indoor noise levels of at least 54 dBA). Similarly, other demolition and construction activities associated with redevelopment under Alternative 2 would result in noise impacts to various sensitive receptors at Camp 4 and the Lodge as well as to sensitive receptors in other parts of the Valley and the park. The loudest heavy-duty equipment (pavers, pneumatic tools, and scrapers) generate up to 80 dBA with equipment controls at a distance of 50 feet; the intensity of the resulting adverse noise impact would depend on the distance to sensitive receptors. Assuming an attenuation rate of 6 dBA for each doubling of distance, construction noise would result in a major adverse impact to sensitive receptors within 175 feet, a moderate adverse impact to sensitive receptors 175 to 275 feet away, a minor adverse impact to sensitive receptors 275 to 350 feet away, and a negligible adverse impact to sensitive receptors 350 to 500 feet away. The *Final Yosemite Valley Plan/SEIS* analyzed and disclosed the major adverse noise impacts associated with construction activity. Negligible and minor impacts could also occur to recreational users at out-of-Valley locations such as Sentinel Dome, Glacier Point, and Yosemite Point; these locations have quieter ambient noise environments, and construction noise has the potential to reflect off of the Valley's granite walls.

The frequency, nature, and location of the construction activity at the project site would vary over the 13-year construction period, and the range of adverse noise impacts would similarly vary. Construction activity would not occur continuously during the entire 13-year period. Rather, intensive Phase 1 construction activity would occur at the Lodge for a two-year period, followed by a several-year period of construction inactivity at the site. Subsequently, the construction of Camp 4 and the Indian Cultural Center during Phase 2, as well as restoration and revegetation activity during Phase 3, would occur during an intensive two- to three-year construction period, also followed by a several-year period of construction inactivity. Finally, intensive Phase 2 construction activity at the Lodge would occur over an approximately two-year period, concluding in fall 2016. During the multiple-year periods of construction inactivity, the project site would be fully functioning.

Less equipment-intensive construction efforts would include the construction of the Indian Cultural Center, revegetation efforts north of Camp 4 and south of the Valley Loop Trail, and restoration of approximately 37.89 acres of the project area, including the removal of a diversion dam and revetments along Yosemite Creek. The structures at the Indian Cultural Center would be constructed using traditional materials and methods to the extent possible. The Indian Cultural Center community building and small parking area would be constructed using conventional construction equipment, resulting in typical construction noise levels, while revegetation and restoration activities would be largely performed by hand using small, skilled work crews and thus would not be noise intensive. Approximately 30 construction workers per day, over 100 concrete and other truck trips, and operation of heavy equipment – predominantly at the Indian Cultural Center site for construction of the proposed community building – would contribute to the local noise environment.

Noise generated by construction-related truck trips and worker commute trips would also adversely affect ambient noise levels along access routes. Truck trips would result in additional noise along access routes. Worker commute trips in shuttle vans would result in a largely

imperceptible increase in traffic volumes (approximately 7 to 10 shuttle vans per day). The 1,020 truck trips that would occur over the two-year period of Phase 1 would contribute to the adverse noise impacts associated with construction activity.

As described in Appendix C, Mitigation Measures Common to All Action Alternatives, Best Management Practices would be employed to mitigate adverse noise impacts, including implementation of standard noise abatement measures during construction (such as schedules that minimize impacts to adjacent noise-sensitive uses), use of best-available noise control techniques where feasible, use of hydraulically or electrically powered impact tools when feasible, and siting of stationary noise sources as far from noise-sensitive uses as possible. Although the mitigation measures would somewhat reduce construction noise levels, during intense periods of construction the noise levels would continue to be substantial and highly noticeable, resulting in an overall major adverse impact.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, major, adverse impact.

Nonvehicle Operational Noise. Overall activity and associated nonvehicle noise levels generated on and near Yosemite Lodge and Camp 4 would be slightly higher under Alternative 2 than under Alternative 1, because of increased visitor activity associated with the expansion of Camp 4 by approximately 28 campsites and of the Lodge by 6 additional units. Nonvehicle noise associated with Alternative 2 would result from an increase in activity in the area, particularly at Camp 4. Noise levels generated by the additional campers at Camp 4, however, would not be greater than levels at the existing Camp 4 campsites under Alternative 1 and would continue to predominately affect other campers, as opposed to guests staying at the Lodge or day visitors at nearby recreational areas. The overall increase in noise levels associated with heightened activity would be largely imperceptible and is considered a negligible effect.

Relocation of the amphitheater under Alternative 2 could result in noise conflicts with guests staying at Cedar, particularly those staying in rooms on the south side of the building. Noise levels generated by evening events at the 300- to 350-seat amphitheater would depend on the type of activity taking place and the number of people who attend, and would likely be less than a television at a normal volume, resulting in an ambient noise level increase of 1 to 5 dBA. Because the events would not occur late into the evenings when sleep disturbance is most likely to occur, the intensity of noise generated at amphitheater events would be negligible to minor.

Impact Significance. Local, long-term, negligible to minor, adverse impact.

Vehicle Operational Noise. While the increased capacity of Camp 4 (28 additional campsites) and Yosemite Lodge (6 additional lodging units) under Alternative 2 would slightly increase the number of vehicle trips at the project site, the realignment of Northside Drive and new design of the local circulation and parking system would result in a noticeable decrease in the ambient noise level at locations where traffic was the dominant noise source. In particular, the realignment of Northside Drive to a location more distant from Camp 4 would noticeably reduce ambient noise levels at the campsite and on the new multi-use paved trail, located along the current Northside Drive alignment, resulting in a minor beneficial impact to the Camp 4 noise environment. The new location of Northside Drive and new site design for the Lodge under

Alternative 2 would not shorten the distance between Lodge units and parking lots or access roads relative to Alternative 1.

Impact Significance. Local, long-term, minor, beneficial impact.

Summary of Alternative 2 Impacts. Noise generated by demolition and construction activities under Alternative 2 would have a local, long-term but temporary, major, adverse effect on the ambient noise environment during the 13-year construction period. As described in Appendix C, Mitigation Measures Common to All Action Alternatives, measures would be employed to mitigate adverse noise impacts, including implementation of standard noise abatement measures during construction (such as schedules that minimize impacts to adjacent noise-sensitive uses), use of best-available noise control techniques where feasible, use of hydraulically or electrically powered impact tools when feasible, and siting of stationary noise sources as far from noise-sensitive uses as possible. Although the mitigation measures would somewhat reduce construction noise levels, during intense periods of construction the noise levels would continue to be substantial and highly noticeable. Overall, Alternative 2 would have a local, long-term, moderate, adverse effect on the noise environment. The adverse effects associated with construction noise and increases in nonvehicle operational noise would be somewhat offset by the beneficial effects associated with reduced vehicle noise.

Cumulative Impacts

The cumulative impact analysis for noise under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative impacts under Alternative 1.

Alternative 2 construction-related noise at the project site would contribute to the adverse construction-related noise impacts of the cumulative projects. Overall, however, Alternative 2 and the cumulative projects would have a regional, long-term, minor, beneficial impact. The permanent beneficial effect of the reduction in regional vehicle noise would offset the temporary construction-related noise impacts and the small increase in nonvehicle noise associated with Alternative 2.

Impairment

Impairment is not addressed in the noise analysis, because this resource topic is peripheral to the protection of the park for future generations.

Cultural Resources

Archeological Resources

Analysis

Construction-related Effects on Archeological Resources. Construction-related activities associated with Alternative 2 would involve major grading, trenching, and other earthmoving activities that would likely disturb intact deposits at all or portions of the five documented archeological sites (prehistoric/historic Indian habitation sites with moderate to high data potential).

Demolition and construction of Yosemite Lodge Area Redevelopment facilities would result in subsurface disturbance to portions of CA-MRP-240/303/H, CA-MRP-59/H, and CA-MRP-748/765/H. Under this alternative, construction of the new Lodge units, removal of the post office building, reconfiguration of the paths and access roads to the new Lodge units, construction of

the promenade and viewing area, relocation and construction of new parking lots (car and overnight bus), and installation of underground utility corridors would result in impacts to archeological deposits. At CA-MRP-59/H, construction of cottage lodging, limited access vehicular circulation route, some loading/unloading parking spaces, utility corridor, and drainage improvements would affect archeological deposits. The northern portion of this site was found to contain undisturbed subsurface deposits, which could be avoided. Removal of an existing parking lot, construction of underground utilities, vegetation restoration, and construction of cottage lodging would affect archeological deposits associated with the southern portion of CA-MRP-240/303/H. Deposits in this area were found to be disturbed compared to other portions of the archeological site outside the project area. The eastern portion of CA-MRP-748/765/H would be affected by the removal of a parking lot, demolition of existing buildings, construction of utility lines, and revegetation.

The Northside Drive realignment, roundabout, multi-use paved trail construction, and relocation of the Valley Loop Trail would have adverse effects on two archeological sites, CA-MRP-240/303/H and CA-MRP-748/765/H. Trenching for utility construction would adversely affect both sites.

Demolition and construction at Camp 4 could affect portions of CA-MRP-63. The southern boundary of CA-MRP-63 is in close proximity to the proposed northern campsite expansion units. However, the majority of cultural materials collected during evaluation of the site were found outside of areas proposed for development.

The location of the Indian Cultural Center is within the eastern boundary of CA-MRP-305/H. Construction of the facility and utility trenching would have an adverse effect on archeological deposits at CA-MRP-305/H. Proposed revegetation activities could result in disturbance or removal of archeological deposits in all of the resource areas, which are contributing elements of the Yosemite Valley Archeological District.

Ground-disturbing activity would result in the alteration, loss of integrity, or destruction of identified prehistoric and historical archeological resources. Any disturbance of an individual archeological resource is considered a permanent, long-term, minor to moderate, adverse impact, depending on the data potential of the resource. As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, measures to mitigate construction-related impacts would be implemented as part of this alternative. Mitigation measures would include avoidance, construction monitoring, documentation, interpretation, materials salvage, data recovery and re-evaluation of National Register eligibility. Efforts to construct within existing building or previous construction footprints (such as the Indian Cultural Center) could reduce effects to archeological resources. Mitigation compliance would conform to the park's 1999 Programmatic Agreement and would reduce these effects. According to Stipulation VII (A), Resolution of Adverse Effects of the Programmatic Agreement, impacts to archeological resources are not considered adverse for purposes of Section 106 of the National Historic Preservation Act if data recovery is carried out in accordance with the 1999 Programmatic Agreement. Application of mitigation would reduce the intensity of adverse impacts to minor.

Impact Significance After Mitigation Included in the Project. Local, permanent, minor, adverse impact.

Operation-related Effects on Archeological Resources. Under Alternative 2, five documented archeological sites lie within the Yosemite Lodge Area Redevelopment. All five resources are contributing elements of the Yosemite Valley Archeological District. Degradation of these archeological resources associated with visitor use and park maintenance would continue, including minor adverse impacts due to casual removal of surface artifacts and subsurface disturbance during routine maintenance of underground components (e.g., utility lines). Any site-specific planning would be performed in accordance with stipulations in the park's 1999 Programmatic Agreement regarding the planning, construction, operations, and maintenance activities at Yosemite National Park.

Impact Significance. Local, permanent, minor, adverse impact.

Summary of Alternative 2 Impacts. Construction-related activities under Alternative 2 would have a minor to moderate adverse effect on five archeological resources within the construction and demolition footprint. As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, mitigation measures would be implemented, including avoidance, construction monitoring, documentation, interpretation, materials salvage, data recovery, and National Register re-evaluation. With mitigation, Alternative 2 would have a local, permanent, minor, adverse effect on archeological resources associated with construction-related activity and operational disturbances. Any site-specific planning would be performed in accordance with stipulations in the park's 1999 Programmatic Agreement.

Cumulative Impacts

The cumulative impact analysis for archeological resources under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 2 and the cumulative projects in Yosemite Valley would result in a regional, permanent, minor, adverse impact on archeological resources. Alternative 2 would contribute to the loss of regional archeological resources as a consequence of the disturbance or degradation of five archeological sites. To mitigate adverse impacts, important information contained in these sites would be recovered according to stipulations of the Programmatic Agreement.

Impairment

Alternative 2 would have a local, long-term, minor, adverse impact on archeological resources due to the potential to affect previously identified archeological deposits. With implementation of mitigation measures, the effect of this alternative would be localized and would not be considered severe. Therefore, Alternative 2 would not impair archeological resources for future generations.

American Indian Traditional Resources

Analysis

Construction-related Effects on Traditional Resources. Five American Indian traditional resources are located within the project area. Demolition and construction activities associated with Alternative 2 have the potential to directly affect traditional resources, including the historic villages of *Koom-i-ne* (CA-MR-59/H and CA-MRP-240/303/H) and *Wah-ho-gah* (CA-MRP-305/H), bracken fern and *helli* (mushroom) collection areas, and stands of California black oaks in the project area. Alteration of the current setting could affect these traditional cultural properties and ethnobotanical resources, resulting in a local, long-term, minor to moderate, adverse impact

to American Indian traditional resources. The park would continue to consult with culturally associated American Indian tribes under the park's 1999 Programmatic Agreement and the 1997 agreement with the American Indian Council of Mariposa County for traditional uses. Through existing agreements and ongoing consultation with associated American Indian tribes, access to and use of special resources in Yosemite Valley would continue.

Every effort would be made to avoid adverse impacts. If such avoidance were not feasible or prudent, the park, in consultation with culturally associated Indian tribes, would mitigate the impacts to the greatest extent possible, potentially reducing the intensity of the impacts. For the two historic villages, mitigation measures could include avoidance, construction monitoring, documentation, interpretation, materials salvage, data recovery, and National Register re-evaluation. Efforts to construct within existing building or previous construction footprints (such as the Indian Cultural Center) would reduce effects to the traditional resources. Mitigation would comply with the park's 1999 Programmatic Agreement and would somewhat reduce these effects.

For the ethnobotanical resources, mitigation included as part of project design, such as confining construction activities to the development footprint, revegetation with traditionally used plants, monitoring of plant growth, and watering active construction areas to reduce dust (see Appendix C, Mitigation Measures Common to All Action Alternatives), would reduce the intensity of adverse impacts to minor.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, adverse impact.

Operation-related Effects on Traditional Resources. Alternative 2 would not change the treatment and management of traditional resources. Development of an Indian Cultural Center would have a beneficial effect on traditional resources, because the center would provide historical continuity for the descendants of the original native inhabitants of Yosemite. Native people who inhabited the Valley lived in the "New Village" until 1969, when almost all the houses were demolished or removed. There is a direct, historical, cultural link between the proposed Indian Cultural Center site and the contemporary American Indians who would use it. The Indian Cultural Center would provide Southern Sierra Miwuk and other culturally associated Yosemite Indian groups and others a gathering place to conduct ceremonies and traditional practices outside of congested Yosemite Village and away from public view. Currently, the roundhouse, or *Hangi*, and other structures are part of the Yosemite Museum in the Village area and are public exhibit areas that cannot be closed to the public, which can be disruptive to traditional practices.

Impact Significance. Local, long-term, minor, beneficial impact.

Summary of Alternative 2 Impacts. Alternative 2 construction-related activities would have a minor to moderate adverse effect on American Indian traditional resources. As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, mitigation measures would include avoidance, construction monitoring, documentation, interpretation, materials salvage, confining construction activities to the development footprint, revegetation with traditionally used plants, monitoring of plant growth, and watering active construction areas to reduce dust. With mitigation to offset adverse construction impacts, Alternative 2 would have an overall local, long-term, minor, beneficial impact on traditional resources due to the development

of an Indian Cultural Center. The beneficial impacts associated with the Indian Cultural Center would largely offset the adverse construction-related impacts of Alternative 2.

Cumulative Impacts

The cumulative impact analysis for traditional resources under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 2 and the cumulative projects would have a regional, long-term, minor, adverse impact on American Indian traditional resources associated with potential disturbance of traditional gathering areas or historic village areas and adverse construction-related effects on traditional resources. The beneficial effects of developing the Indian Cultural Center would not offset the adverse effects of the cumulative projects.

Impairment

Alternative 2 would have a local, long-term, minor, adverse and beneficial effects on American Indian traditional resources. Therefore, Alternative 2 would not impair traditional resources for future generations.

Cultural Landscape Resources, including Historic Sites and Structures

Analysis

Operation-related Effects on Cultural Landscape Resources. Alternative 2 would change or alter the Yosemite Falls Trail near Camp 4, the Valley Loop Trail on the northern edge of the project area, and Camp 4, a historic site. No buildings or structures that are contributing elements to the Yosemite Valley Cultural Landscape are located in the Yosemite Lodge Area Redevelopment project area.

The Yosemite Falls Trail and Valley Loop Trail are eligible for listing on the National Register of Historic Places associated with Yosemite Valley circulation systems. Under this alternative, the Valley Loop Trail would be realigned, and the Yosemite Falls Trail would be extended to the proposed Camp 4 shuttle bus stop. These changes would alter the current circulation system of trails in the project area.

Camp 4 is listed on the National Register of Historic Places for its association with the growth and development of rock climbing. Expansion of the campground would not alter the historic setting or result in the loss of elements that contribute to this National Register property. Camp 4 is listed on the National Register of Historic Places at the national level under Criterion A for its association with the growth and development of mountaineering during the period 1947 to 1970. The events associated with Camp 4 are what made the property eligible for the National Register of Historic Places and not the physical setting. The expansion of Camp 4 would still provide a place for climbers to gather, retaining historic ties to the original Camp 4. The design of Camp 4 would still retain elements consistent with the current Camp 4. Alteration of Camp 4 would result in no adverse impacts to the property.

As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, Alternative 2 would comply with the park's 1999 Programmatic Agreement. Mitigation measures would include data recovery and documentation. Overall, Alternative 2 would have a local, long-term, minor, adverse impact on cultural landscape resources.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, adverse impact.

Summary of Alternative 2 Impacts. Alternative 2 would alter two trails and Camp 4, which are eligible for listing or listed on the National Register of Historic Places. The trails are contributing elements to the Yosemite Valley Cultural Landscape as circulation systems. These impacts to cultural landscape resources would be minor and adverse. As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, mitigation measures would include documentation. Overall, Alternative 2 would have a local, long-term, minor, adverse impact on cultural landscape resources.

Cumulative Impacts

The cumulative impact analysis for cultural landscape resources under Alternative 2 is the same as described under Alternative 1. Please see the discussion of cumulative effects under Alternative 1.

Alternative 2 and the cumulative projects would have a regional, long-term, minor to major, adverse impact on the cultural landscape. Alterations to the cultural landscape at the Yosemite Lodge Area Redevelopment site would contribute to the adverse effects of the cumulative projects.

Impairment

Alternative 2 would result in a local, long-term, minor, adverse impact to cultural landscape resources. The effect of this alternative would be localized The extent and quality of cultural landscape resources throughout the park would remain unaffected under Alternative 2. Therefore, Alternative 2 would not impair cultural landscape resources for future generations.

Section 106 Summary for Alternative 2. For purposes of assessing effects to historic properties under the National Historic Preservation Act and implementing regulations (36 Code of Federal Regulations 800), the effects are considered either adverse or not adverse, or there is no effect. For purposes of assessing effects to historic properties under the National Historic Preservation Act and implementing regulations (36 Code of Federal Regulations 800), the effects are considered either adverse or not adverse, or there is no effect.

Archeological sites would be managed in accordance with the 1999 Programmatic Agreement. For CA-MRP-59/H, monitoring during construction and data recovery in the site area north of existing Northside Drive would be undertaken. CA-MRP-63 could be avoided through project design. If the site could not be avoided, then monitoring during construction and data recovery would be appropriate treatments. For the remaining three archeological sites, CA-MRP-240/303/H, CA-MRP-305/H, and CA-MRP-748/765/H, preparation of an Inadvertent Discovery Plan, data recovery, and monitoring during construction would be completed. The park has developed mitigation measures through consultation with culturally associated American Indian groups to address adverse effects on American Indian traditional resources. Cultural landscape resources would be avoided, and/or documented. Construction of project components would not take place until the appropriate mitigation treatment had been determined in consultation with the California State Historic Preservation Officer and, if appropriate, the American Indian Council of Mariposa County.

American Indian traditional resources would be managed in accordance with the 1999 Programmatic Agreement, thereby resolving adverse impacts. The park has developed mitigation measures through consultation with culturally associated American Indian groups to address adverse effects on American Indian traditional resources. Cultural landscape resources would be avoided, documented, or subject to data recovery. Construction of project components would not take place until the appropriate mitigation treatment had been determined in consultation with the California State Historic Preservation Officer and, if appropriate, the American Indian Council of Mariposa County. Construction of the various components of the Yosemite Lodge Area Redevelopment project has the potential to adversely affect historic properties or properties recommended as contributing elements of the Yosemite Valley Traditional Cultural Property District. Under regulations of the Advisory Council on Historic Preservation (36 Code of Federal Regulations 800.5) addressing the criteria of effect and adverse effect, the National Park Service finds that construction of the facilities associated with Alternative 2 would have the potential to adversely affect historic properties. While every effort is made to avoid or minimize impacts to cultural resources as a result of project design, some impacts are unavoidable. In accordance with National Park Service policies and procedures, the park would continue to protect cultural resources to the greatest extent possible. Disturbance of significant cultural resources would be avoided wherever possible, but in instances where avoidance or preservation could not be achieved, appropriate mitigation would be carried out under provisions of the 1999 Programmatic Agreement.

Social Resources

Scenic Resources

Analysis

Construction-related Effects on Scenic Resources. The three-phase construction effort for Alternative 2 would have local, short and long-term but temporary impacts to scenic resources over the 13-year period, from spring 2004 through fall 2016. Adverse construction-related impacts would be associated with clearly visible demolition and construction activities that would detract from the visual setting of the Yosemite Lodge Area Redevelopment site.

The intensity and nature of the construction activity would vary over the 13-year construction period, and the range of adverse impacts to scenic resources would similarly vary. Construction activity would not occur continuously during the entire 13-year period. Rather, intensive Phase 1 construction activity would occur at the Lodge for a two-year period, followed by a several-year period of construction inactivity at the site. Subsequently, Phase 2 Camp 4 and Indian Cultural Center construction activity as well as Phase 3 restoration and revegetation activity would occur during an intensive two- to three-year construction period, also followed by a several-year period of construction inactivity. Finally, intensive Phase 2 construction activity at the Lodge would occur over an approximately two-year period, concluding in fall 2016. During the multiple-year periods of construction inactivity in the phasing effort, the Yosemite Lodge Area Redevelopment site would be fully functioning, with no visible signs of previous or upcoming construction activity.

During intense construction periods at Yosemite Lodge and Camp 4, there would be a local, short- and long-term but temporary, moderate, adverse impact to scenic resources. Construction staging areas and staging activities would be visible. Construction activities including building and

parking demolition, new building construction, existing building renovation, paving activities, trail removal and development, utility removal and installation, culvert installation, and tree removal activities (1,059 trees) would have readily apparent but localized and temporary, adverse impacts on scenic resource values of the project area. Short- and long-range views of the project site would be of a construction zone, which would visually detract from the national park character of the area. The presence of construction workers, construction-related truck trips, and heavy equipment activity would further detract from the visual character of the project site. Between 25 to 90 construction workers, over 1,200 concrete and tractor-trailer truck trips, and operation of heavy equipment (including backhoes, bulldozers, graders, dump trucks, a paving machine, a small crane truck, watering trucks, air compressors, jackhammers, chainsaws, etc.) would detract from short- and long-range views of the site as well as views of scenic resources (e.g., Yosemite Falls, Sentinel Rock, Half Dome) from the project site.

Less intensive construction efforts at the project site would include the construction of the Indian Cultural Center, revegetation efforts north of Camp 4 and south of the Valley Loop Trail, and restoration of 37.89 acres of the project area, including the removal of a diversion dam and revetments along Yosemite Creek. Removal of 294 trees associated with forest management practices was included in the analysis of intense construction activities described above. The less intensive construction efforts at the project site would have a local, short- and long-term but temporary, minor, adverse impact to scenic resources. Construction staging areas would be small and localized. The traditional structures at the Indian Cultural Center would be constructed using traditional materials and methods to the extent possible, and most of the construction work would be done as a community effort by tribal members. The Indian Cultural Center community building and small parking area would be constructed using conventional methods. Revegetation and restoration activities would be largely done by hand using small, skilled work crews. The presence of construction workers, construction-related truck trips, and heavy equipment activity would somewhat detract from the visual character of the project site. Approximately 30 construction workers, over 100 concrete and other truck trips, and operation of heavy equipment (predominantly at the Indian Cultural Center site for construction of the proposed community building) would somewhat detract from short- and long-range views of the site. Views of scenic resources from the project site would be minimally affected.

As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, measures to mitigate adverse construction-related scenic resource impacts would be implemented as part of this alternative. These measures include fencing construction areas to visually screen construction activity, and consolidating construction equipment and materials to the staging areas at the end of each work day to limit the visual intrusion of construction equipment during non-working hours. These mitigation measures would somewhat lessen the adverse construction-related impact to scenic resources, but would not change the magnitude of the adverse effect.

Impact Significance After Mitigation Included in the Project. Local, short- and long-term, moderate, adverse impact.

Operation-related Effects on Scenic Resources. Alternative 2 would have local, long-term, moderate, beneficial effects on views of the project area due to the design improvements to the site. The character of existing and new built features at Yosemite Lodge would be consistent with the architectural guidelines for Yosemite Lodge, and the built features at Camp 4 and the Indian

Cultural Center would be designed consistent with the Yosemite Valley architectural guidelines. The architectural guidelines collectively require that buildings be constructed in harmony with their natural setting, and blend with the surrounding landscape. Buildings would be grouped in and around natural features such as trees and boulders to minimize their visual impact in the landscape. Building architecture would make use of traditional National Park Service rustic and historic design elements. Built features in the project area would have a consistent and aesthetically pleasing architectural style that would be more connected and unique to a national park experience. In addition, some existing structures that detract from the consistent architectural style of the site would be removed, such as the maintenance buildings, temporary employee housing structures, Wellness Center, and electrical substation.

Additional design improvements associated with Alternative 2 include the orientation of new buildings to take advantage of views of Valley scenic features. For example, the new registration building would be designed to enhance visitors' sense of arrival at Yosemite Lodge and would be oriented to provide views of Yosemite Falls, Half Dome, and Sentinel Rock. Similarly, the design of the proposed new amphitheater would be oriented toward views of Yosemite Falls and Sentinel Rock. In addition, the groupings of similar types of lodging buildings would create distinct visual communities within the Lodge site.

The layout of the project site under Alternative 2 would have a pedestrian focus and would increase the length of trails by 2,100 linear feet, providing new opportunities for pedestrian views of prominent visual features. The proposed development of the promenade and two small viewing plazas would provide views of Yosemite Falls, Half Dome, and Sentinel Rock. Proposed conversion of Northside Drive to a multi-use paved trail would provide new opportunities for pedestrian views of Yosemite Falls, Half Dome, Sentinel Rock, and the granite cliffs of Yosemite Valley. Parking and roads would have a much reduced visual presence on the Yosemite Lodge site. The main Lodge parking lot would be centralized, making the area east of the food and beverage building largely vehicle free. Parking would no longer line the Lodge entry roadway or be located directly adjacent to lodging units. Bus parking would be moved to the western end of the site. The realignment of Northside Drive would remove a visual barrier between Yosemite Lodge and Lower Yosemite Fall and Camp 4, and views from the Lodge toward Yosemite Falls would no longer include the roadway and vehicles in the visual foreground. The proposed roundabout would afford views toward Yosemite Falls for visitors in vehicles. The pedestrian-focused layout of the site would have a local, long-term, moderate, beneficial impact on scenic resources.

The proposed revegetation and restoration activities under Alternative 2 would improve the condition of natural resources at the project site and enhance the visitor's connection with the out-of-doors. Revegetation activities would re-establish existing and historic native plant communities and remove non-native species. Revegetation efforts would be used to screen built features from prominent views; however, plant species selected for key view corridors would not block views of Valley scenic features. At the Indian Cultural Center, site landscaping would include cultural landscape plants, such as black oak and bracken fern. Camp 4 would be redesigned to conform to the existing landscape, and revegetated to improve ground cover and opportunities for tree cover at the campground. Proposed restoration of 37.89 acres of the project area would improve the condition of natural resources at the project site, thus improving views of the restoration areas. Tree management activities would remove 1,059 trees from the project site, including 100 trees for view corridor management and 294 trees for forest management. This

would create a more open landscape, similar to Valley conditions before Euro-American settlement. In addition to restoring historic native vegetation communities, tree management would open key view corridors, including views of Yosemite Falls, Half Dome, Sentinel Rock, Cathedral Spires, Leidig Meadow, and the granite cliffs of Yosemite Valley. Proposed revegetation and restoration activities, particularly viewshed and forest management efforts, would have a local, long-term, moderate, beneficial impact on scenic resources.

The increase in developed features at the project site would have a local, long-term, moderate, adverse effect on views of and from the area. There would be an increase in the number of lodging units (from 245 to 251 lodging units). The number of lodging buildings would increase from 15 to 25 buildings, although the new buildings would predominantly be smaller-scale, four-plex cabin units. New built facilities would be developed at Camp 4, including a new restroom and shower building, restroom building, expanded kiosk, cooking pavilion, and climbing display building. Also at Camp 4, campsites would be expanded into an undeveloped area.

Similarly, the Indian Cultural Center would be constructed at a former village site and would include proposed development of a roundhouse and sweat lodge, 15 cedar-bark umachas, a community building, and shaded gathering and demonstration areas (approximately 150 to 1,500 square feet). New propane tank farms would be developed on the Lodge site and the Indian Cultural Center site, adding new industrial visual elements to the project area. Tree management activities would remove trees that serve as visual screening for development at the Lodge and Camp 4, which would increase views of developed features at the site. In addition, the 191,000-square-foot increase in impervious surface area on the project site would contribute to a more built appearance of the site.

New parking areas would be constructed on the project site, and the number of Lodge and Camp 4 parking spaces would increase from 575 parking spaces to 596 parking spaces. Most Lodge guest parking would be centralized on the site. The polygon shape of the centralized Lodge parking lot would be more visible from vantage points above the site than the rectilinear parking configuration under Alternative 1. Parking lots would be paved with a black surface to minimize views from the Valley rim, although views of the packed earth parking lot at Camp 4 under Alternative 1 would be more natural-appearing than the black asphalt lot proposed under this alternative. Under Alternative 2, parking areas would be more prominent in views of the Lodge site from Camp 4.

As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, a measure to mitigate adverse development-related scenic resource impacts would be implemented as part of this alternative. The mitigation measure would include providing vegetative screening to block views of developed features, including parking areas, buildings, and above-ground utilities such as the propane tank farms. Vegetative screening would utilize native plant species that would not be of sufficient height to block views of Valley scenic features. This mitigation measure would lessen the adverse development-related impacts to scenic resources, but would not change the magnitude of the adverse impact.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, beneficial impact.

Summary of Alternative 2 Impacts. Alternative 2 would have a local, long-term, minor, beneficial impact on scenic resources compared to Alternative 1. The beneficial effects associated with the proposed facility design improvements, pedestrian-focused site layout, revegetation and restoration activities, and viewshed and forest management efforts would outweigh the adverse effects to scenic resources associated with construction activities and increased developed features at the project site.

Cumulative Impacts

The cumulative impact analysis for scenic resources under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

The cumulative projects in Yosemite Valley would result in a regional, long-term, moderate, beneficial impact on scenic resources because of the overall emphasis on restoring disturbed or developed land to natural conditions and improving the health of ecosystems. Alternative 2 would contribute the beneficial effects of the cumulative projects. Alternative 2 and the cumulative projects would result in a regional, long-term, moderate, beneficial impact on scenic resources.

Impairment

Alternative 2 would result in a local, long-term, minor, beneficial impact on scenic resources compared to Alternative 1. Since Alternative 2 would have an overall beneficial effect, this alternative would not impair scenic resources for future generations.

Visitor Experience

Analysis

Construction-related Recreation Effects. Alternative 2 would result in adverse construction-related impacts associated with temporary interference of access to recreational opportunities in and adjacent to the project area. The intensity and nature of construction activities would vary over the 13-year construction period, and the adverse impacts on recreation activities would similarly vary. Project construction would require a typical peak workforce of 80 to 90 individuals for one year and 1,020 truck trips under Phase 1, a typical peak workforce of 65 to 75 individuals for one year and 276 truck trips under Phase 2, and a typical peak workforce of approximately 30 individuals working seasonally and 20 truck trips under Phase 3.

Construction activities at the Lodge would affect sightseeing opportunities, use of multi-use paved trails, and other recreation uses within the Lodge grounds, such as picnicking and swimming. In addition, access through the Lodge grounds to other nearby recreational areas, such as the Merced River or Yosemite Falls, would be disrupted. The presence of construction equipment, visibility of construction activities, air and noise effects, and removal of vegetation and trees during Lodge redevelopment would temporarily diminish the value of sightseeing opportunities in the area. Disruption would be greatest during one-year periods within Phase 1 and Phase 2 when intensive construction activities would occur.

Camp 4 would remain open during construction. However, construction activities at Camp 4 could disrupt use of some campsites while those sites are being renovated, designated picnic tables and other campground facilities, and access to the Valley Loop Trail, the Yosemite Falls

Trail, and nearby climbing routes. Disruption would be greatest during a one-year period within Phase 2 when intensive construction activities would occur.

Construction activities required to realign Northside Drive and the Indian Cultural Center would disrupt access to other park recreation opportunities via Northside Drive. Restoration activities conducted under Phase 3 could also disrupt access to adjacent recreation areas.

Traffic control measures, air quality and noise measures, and implementation of a visitor outreach communication plan, as described in Appendix C, Mitigation Measures Common to All Action Alternatives, would be employed to reduce effects related to recreation access. Construction-phase activities under Alternative 2 would result in a local, long-term but temporary, minor, adverse impact on recreation activities in the project area compared to Alternative 1.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor, adverse impact.

Operation-related Recreation Effects. Under Alternative 2, recreation opportunities would be increased and the experience altered from that described for Alternative 1. Camp 4 would be continue to be managed as a first-come, first-served campground; however, the number of campsites would be increased from 37 to 65, with one fire ring for every two campsites, and the number of parking spaces would be increased from 111 to 195 spaces. New and redesigned campsites would be compatible with the site character, and important historic features related to the campgrounds use as an unofficial climbers' camp would be retained.

Redevelopment of Yosemite Lodge would improve sightseeing opportunities compared to Alternative 1 by creating a lodging experience more connected with and unique to Yosemite National Park; providing a pedestrian-focused site design, including a promenade, two small viewing plazas, and removal or renovation of facilities that currently dominate important views; and realigning existing Northside Drive. Restoration of approximately 37.89 acres, revegetation of existing and historic vegetation communities in the project area, and removal of up to 100 trees to restore key views and view corridors would enhance sightseeing opportunities in the project area.

Under Alternative 2, redevelopment of the Yosemite Lodge with a pedestrian-focused site design, including a promenade and roundabout, would encourage walking, hiking, and bicycling in the project area and would reduce the traffic hazard to pedestrians and bicyclists that occurs under Alternative 1 by locating pedestrian crossings in areas with the greatest sight distance. The promenade would serve as the central pedestrian corridor, and connections between the main pedestrian entrance and the Lower Yosemite Fall area would be established. Under Alternative 2, existing Northside Drive between the roundabout and the western connection of realigned Northside Drive and existing Northside Drive would be converted to a multi-use paved trail, increasing opportunities for trail use in the project area. In addition, the existing multi-use paved trail south of the Lodge site would be improved and connected to Swinging Bridge. The Valley Loop Trail and stock trail would be located on the western edge of Camp 4 on the east side of the existing intermittent drainage. Implementation of Alternative 2 would result in an increase of 2,100 linear feet of trails, including an overall increase of 8,550 linear feet of multi-use paved trails, an increase of 100 linear feet of hiker/stock trails, and a decrease of 6,650 linear feet of pedestrian

trails compared to Alternative 1. Alternative 2 would install a new bicycle stand near the multi-use paved trail, and bicycle racks would be dispersed throughout the Lodge site and Camp 4 to encourage bicycle use in the project area.

Climbing opportunities in the project area would not be affected, although (as noted above) the number of campsites and parking spaces available at Camp 4 in the vicinity of popular climbing routes would be increased. Conversion of Northside Drive to a multi-use paved trail in the vicinity of Camp 4 and redevelopment of project area trails and paths would enhance opportunities for climbing observation.

Picnicking in the project area would not be noticeably affected by implementation of Alternative 2; however, picnic areas could be relocated and/or improved and a cooking pavilion with picnic tables would be established at Camp 4. Implementation of Alternative 2 would not affect swimming, wading, and fishing in the Merced River, winter activities, or tours.

Overall, Alternative 2 would result in a local, long-term, minor to moderate, beneficial impact compared to Alternative 1, due to the provision of additional recreation opportunities and the improvement of existing recreation opportunities.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor to moderate, beneficial impact.

Construction-related Orientation and Interpretation Effects. During construction activities under Alternative 2, operations at the tour/activities desk at the Lodge registration building, the information kiosk at Camp 4, interpretive programs at the Lodge amphitheater, evening programs in the Yosemite Lodge Cliff Room, and motor coach tours departing from the Lodge would be continued. However, service could occasionally be interrupted, and tours could be delayed and/or detoured, particularly during intensive Phase 1 and Phase 2 construction periods. A visitor outreach communication plan, temporary relocation of orientation and interpretation services, and construction phasing, as described in Chapter II, Alternatives, and Appendix C, Mitigation Measures Common to All Action Alternatives, would be implemented to reduce effects related to disruption of orientation and interpretation opportunities. Facility construction under Alternative 2 would result in a local, long-term but temporary, minor, adverse impact to orientation and interpretation compared to Alternative 1.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor, adverse impact.

Operation-related Orientation and Interpretation Effects. Under Alternative 2, several new orientation and interpretation opportunities would be provided within the project area, in addition to opportunities that are currently available, such as the tour/activities desk, information kiosk at Camp 4, and interpretive programs offered at the Lodge under Alternative 1. The amphitheater would be relocated to a new location with a larger capacity (300 to 350 individuals), and a fire circle would be constructed for evening interpretation activities. The Cliff Room would be improved and would accommodate a larger capacity. The new Camp 4 registration kiosk would continue to provide visitor orientation information, but would also include an exterior posting area not available under Alternative 1. A climbing display building would be constructed on the Camp 4 site, providing interpretive displays and presentations on the climbing history of

Yosemite National Park, and would incorporate an interior lounge area for park visitors to congregate while viewing climbing displays. Redevelopment of project area trails would improve connections to the Valley trail system and would provide improved wayfinding and interpretive signs.

While primarily providing for American Indian traditional activities and ceremonies, the new Indian Cultural Center would also provide interpretation and educational opportunities. As described in Chapter II, Alternatives, the center would be established at the site of the last historically occupied American Indian village in Yosemite Valley and would include a traditional village and a modern community building. The center would be built, managed, and maintained by the American Indian Council of Mariposa County for the benefit of all Yosemite Indians. The traditional village would be open to visitors (except during ceremonial activities) for interpretation and education regarding cultural traditions. Site landscaping would include cultural landscape plants used by American Indians, further providing interpretation opportunities.

Overall, Alternative 2 would result in a local and regional, long-term, moderate to major, beneficial impact compared to Alternative 1, due to the increase in orientation and interpretation opportunities, particularly at the climbing exhibit at Camp 4 and at the Indian Cultural Center.

Impact Significance After Mitigation Included in the Project. Local and regional, long-term, moderate to major, beneficial impact.

Construction-related Visitor Services Effects. Under Alternative 2, public use of visitor services in the project area would be disrupted. While new lodging units and new/improved campsites are being constructed, the project area would experience some disruptions in visitor services. Camp 4 would remain open during construction activities; however, some existing campsites would not be available during Phase 2 renovation activities. Food service at the Food Court and the Nature Shop would remain open during construction activities; however, other lodge retail services would be disrupted during Phase 2 renovations and could be intermittently disturbed during construction activities at adjacent Lodge areas. Park visitors traveling through the project area to the Lodge, Camp 4, or other park attractions could experience delays.

The demolition and construction scheduling would be implemented to ensure that the new replacement lodging units are operational before existing lodging units are removed. As a result, there would be no adverse effect on visitor services from a temporary reduction in the number of lodging facilities.

Traffic control measures, a visitor outreach communication plan, and construction phasing, as described in Appendix C, Mitigation Measures Common to All Action Alternatives, would be implemented to reduce adverse effects related to disruptions in visitor services. Facility construction under Alternative 2 would result in a local, long-term but temporary, minor to moderate, adverse impact to visitor services compared to Alternative 1.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor to moderate, adverse impact.

Operation-related Visitor Services Effects. Compared to Alternative 1, Alternative 2 would result in improved visitor service facilities. The Lodge would be redeveloped to provide an experience that is more unique to a national park lodge and Yosemite National Park. The new registration building would be oriented to enhance guests' arrival experience, and vehicle, bus, and pedestrian approaches would be redesigned to improve traffic flow and pedestrian safety compared to Alternative 1. The overall number of lodging units would be increased to 251 units, compared to 245 units under Alternative 1. The character of units would be improved to include more aesthetic appeal and similar architectural style, and buildings would be located outside the 100-year floodplain. Lodging units would be sited to provide a community-like character, with one-story cabin units grouped together on the western side of the Lodge site, and two-story cottage units interspersed with existing two-story lodging buildings on the eastern side of the Lodge site. The number of parking spaces would be reduced, and the Lodge would be redeveloped to provide a more pedestrian-friendly experience, with guest parking centrally located. The typical distance from parking to lodging units would be 300 to 1,320 linear feet, with an extreme distance of 1,830 linear feet. An appropriate number of disabled-access parking spaces would be provided. The Yosemite Lodge common facilities would remain, but would be renovated and improved to better use indoor space.

Under Alternative 2, the number of campsites at Camp 4 would be increased to a total of 65 campsites, with one fire ring for every two campsites. New campsites and retained campsites east of the intermittent creek at Camp 4 would be designed to conform to the existing landscape, compatible with site character and natural features. Approximately 5% of the campsites would be disabled-accessible. The new Camp 4 registration kiosk and restroom facilities would be redesigned and increased in size to more adequately serve park visitors compared to Alternative 1, including two restroom facilities in the center of the camping areas, one shower/restroom facility near the existing parking lot, and shared toilet facilities at a centralized facility for day visitors. A common cooking pavilion would be provided to replace the single outdoor sink located at the existing Camp 4 restroom building and to serve as an area for cooking, cleaning dishes, eating, and gathering in groups. Up to 65 gear storage lockers would be provided in centralized areas. Parking at Camp 4 would be increased from 111 unpaved parking spaces to 195 paved spaces at Camp 4 and the Lodge site, with an appropriate number of spaces for disabled visitors.

Alternative 2 would establish an Indian Cultural Center. The center would provide a location for ceremonial activities and would include a community building and a traditional village open to park visitors (except during ceremonial activities). A buffer area would be retained between the Indian Cultural Center and Camp 4, which would involve removing five campsites west of the intermittent creek near the two project areas.

Under Alternative 2, the realigned Northside Drive and the roundabout would improve the level of service on Northside Drive. Park visitors traveling through the project area to the Lodge, Camp 4, or other park attractions would experience fewer delays than under Alternative 1.

Overall, Alternative 2 would result in a local and regional, long-term, moderate to major, beneficial impact compared to Alternative 1, due to improvements to visitor services in the project area and provision of the new Indian Cultural Center.

Impact Significance After Mitigation Included in the Project. Local and regional, long-term, moderate to major, beneficial impact.

Construction-related Night Sky Effects. Under Alternative 2, construction hours would generally be from 8:00 a.m. to 6:00 p.m. However, some utility work would be scheduled for nights. Construction-related activities that occur at night would require lighting and would introduce light trespass. Night lighting would be limited to the project area, and night sky illumination would be minimal. Mitigation measures described in Appendix C, Mitigation Measures Common to All Action Alternatives (such as directing and shielding night lighting equipment), would be employed to reduce effects on the night sky. Construction activities under Alternative 2 would result in a local, long-term but temporary, minor, adverse impact compared to Alternative 1.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor, adverse impact.

Operation-related Night Sky Effects. While Alternative 2 would increase the square footage of facilities in the project area (including the addition of the Indian Cultural Center and expansion of Camp 4 in previously undeveloped areas) and increase the required exterior lighting, the project design calls for lighting that would minimize the impact on the night sky (see Chapter II, Alternatives). Site lighting would follow criteria established by the Yosemite Valley Architectural Guidelines and would replace aged lighting infrastructure. Landscape lighting would be subtle, nonglare lighting based upon a pattern of spaced light pools. Lighting sources could be concealed. In addition, mitigation measures included in the project would further minimize the impact on the night sky by incorporation of lighting guidelines and prescriptions (see Appendix C, Mitigation Measures Common to All Action Alternatives). Alternative 2 would result in a local, long-term, negligible, adverse impact compared to Alternative 1, due to the overall increase in required exterior lighting.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible, adverse impact.

Summary of Alternative 2 Impacts. Under Alternative 2, construction activities would disrupt use of and access to recreation opportunities in the project area and adjacent areas. Traffic control measures, air quality and noise measures, and implementation of a visitor outreach communication plan, as described in Appendix C, Mitigation Measures Common to All Action Alternatives, would be employed to reduce effects related to recreation access. Construction-phase activities under Alternative 2 would result in a local, long-term but temporary, minor, adverse impact in the project area compared to Alternative 1. Overall, Alternative 2 would result in a local, long-term, minor to moderate, beneficial impact compared to Alternative 1, due to the provision of additional recreation opportunities and improvement of existing recreation opportunities.

Construction activities under Alternative 2 would disrupt orientation and interpretation opportunities in the project area. A visitor outreach communication plan and construction phasing, as described in Chapter II, Alternatives, and Appendix C, Mitigation Measures Common to All Action Alternatives, would be implemented to reduce effects related to disruption of orientation and interpretation opportunities. Facility construction under Alternative 2 would result in a local, long-term but temporary, minor, adverse impact to orientation and interpretation

compared to Alternative 1. Overall, Alternative 2 would result in a local and regional, long-term, moderate to major, beneficial impact compared to Alternative 1, due to the increase in orientation and interpretation opportunities, particularly at the Indian Cultural Center.

Under Alternative 2, construction activities would disrupt use of existing visitor-service facilities. Traffic control measures, a visitor outreach communication plan, and construction phasing, as described in Appendix C, Mitigation Measures Common to All Action Alternatives, would be implemented to reduce effects related to visitor services. Facility construction under Alternative 2 would result in a local, long-term but temporary, minor to moderate, adverse impact to visitor services compared to Alternative 1. Overall, Alternative 2 would result in a local and regional, long-term, moderate to major, beneficial impact compared to Alternative 1, due to improvements to visitor services in the project area and provision of the new Indian Cultural Center.

Construction activities under Alternative 2, with mitigation described in Appendix C, Mitigation Measures Common to All Action Alternatives, would result in a local, long-term but temporary, minor, adverse impact to the night sky associated with nighttime lighting. While operation under Alternative 2 would require increased exterior lighting, the design of such lighting (as described in Chapter II, Alternatives) and the application of mitigation measures (as described in Appendix C, Mitigation Measures Common to All Action Alternatives) would result in a local, long-term, negligible, adverse impact to the night sky compared to Alternative 1.

Cumulative Impacts

The cumulative impact analysis for visitor experience under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

The cumulative projects would have a local, long-term, minor, beneficial effect on visitor experience due to expanded opportunities in the park and improved transit service to more park destinations. Alternative 2 and the cumulative projects would result in a local, long-term, minor, beneficial impact on visitor experience due to expanded opportunities in the park and improved transit service to more park destinations. The beneficial effects of Alternative 2 on visitor experience would contribute to the cumulative beneficial effect.

Impairment

Alternative 2 would result in a local, long-term but temporary, minor to moderate, adverse impact and a local and regional, long-term, minor to major, beneficial effect on visitor experience in the project area. In addition, Alternative 2 would result in a local, long-term, negligible, adverse impact to the night sky compared to Alternative 1. Although the project area provides important opportunities for enjoyment of the park, the adverse effect of this alternative on visitor experience would be localized to the Yosemite Lodge and Camp 4 areas, and an overall beneficial long-term effect would occur. Thus, the adverse impact would not be considered severe. Further, the new Indian Cultural Center under Alternative 2 would result in a regional beneficial impact to orientation, interpretation, visitor services, improving the diversity and quality of visitor experience opportunities throughout the park. Therefore, Alternative 2 would not impair visitor experience opportunities for future generations.

Socioeconomics

Analysis

Construction-related Effects on the Socioeconomic Environment. The three-phase construction effort for the Yosemite Lodge Area Redevelopment would have regional, long-term but temporary, beneficial impacts to the socioeconomic environment over the 13-year period, from spring 2004 through fall 2016. The intensity and nature of the construction activity would vary over the 13-year construction period, and the range of beneficial impacts to the socioeconomic environment would similarly vary. Construction activity would not occur continuously during the entire 13-year period. Rather, intensive Phase 1 construction activity would occur at the Lodge for a two-year period, followed by a several-year period of construction inactivity. Subsequently, Phase 2 (Camp 4 and Indian Cultural Center construction activity), as well as the Phase 3 restoration and revegetation efforts, would occur during an intensive two- to three-year construction period, also followed by a several-year period of construction inactivity. Finally, intensive Phase 2 construction activity at the Lodge would occur over a two-year period, concluding in fall 2016.

The demolition and construction scheduling would be implemented to ensure that new replacement lodging units are operational before existing lodging units are removed. As a result, there would be no decrease in the supply of lodging units, and thus no adverse economic impact on the park concessioner.

Phase 1 would cost approximately $20.3 million and take two years to complete. Construction-related employment would vary from 30 to 40 individuals, up to a maximum of 80 to 90 individuals during periods of intensive construction. Total employment is estimated to be 85 full-time equivalents, corresponding to 56 new jobs and $13.4 million in construction spending for the region during the most intense year of construction under Phase 1.

Phase 2 is expected to cost $27.4 million and would occur over a 10-year period. During the construction period, construction-related employment would vary from 25 to 35 individuals up to a maximum of 65 to 75 individuals during periods of intensive construction. However, many years of construction inactivity are expected during this 10-year phase. Total employment during Phase 2 is estimated to be 31.5 full-time equivalents, corresponding to 8 new jobs to the region annually and $6.9 million during periods of construction activity.

The short seasonal work efforts for the Phase 3 revegetation and restoration activity may coincide with some Phase 2 construction activity. The total employment during Phase 3 is estimated to be 3 full-time equivalents. Averaged over two years when construction activity is occurring, this corresponds to 1.5 new jobs to the region annually and $2.1 million during periods of construction activity.

During the most intense construction periods at Yosemite Lodge and Camp 4, there would be up to 90 construction workers employed by the project. However, this employment would be temporary. The maximum annual employment during any year of construction activity is estimated to be 56 full-time equivalents for the region, resulting in $13.4 million in construction spending.

Compared to the region's total construction sector employment of 3,070, the additional employment during the major year of construction in Phase 1 would result in a 1.8% increase in employment. In addition to this direct employment impact, it is estimated that each $1 million of construction spending could generate up to 6.2 indirect jobs in other sectors of the region's economy, based on IMPLAN multipliers (NPS 2000a). Thus, an additional 83 indirect jobs would be generated during peak project employment, resulting in a negligible beneficial impact on the regional economy. The direct and indirect construction-related effects on regional employment would represent a long-term but temporary, minor, beneficial impact to the regional socioeconomic environment.

During the most intense construction period, annual construction spending would be $13.4 million. Compared to the region's total annual construction sector output of $580 million, project-related construction spending would represent a 2.3% increase in spending, resulting in a regional, long-term but temporary, minor, beneficial impact to the socioeconomic environment.

During the less intensive construction efforts, the project would employ between 25 to 35 part-time construction workers during the year, resulting in a regional, negligible, beneficial impact to the socioeconomic environment.

Impact Significance. Regional, long-term but temporary, negligible to minor, beneficial impact.

Operation-related Effects on the Regional Economy. As identified in the *Final Yosemite Valley Plan/SEIS*, future lodging facilities at Yosemite Lodge under this alternative would increase from 245 to 251 units, and the public camping capacity at Camp 4 would increase from 37 to 62 sites. The proposed increases in future lodging by 6 units and 25 campsites are the primary actions that would affect the regional economy. The increase in overnight capacity would correspondingly result in greater overnight visitation, which would generate more visitor spending and thus beneficially affect the regional economy.

The socioeconomic impact analysis performed for the *Final Yosemite Valley Plan/Supplemental Impact Statement* estimated that: (1) the proposed 6 additional Yosemite Lodge units would have a 92% occupancy rate, resulting in 2,100 additional room-nights and 6,600 additional overnight visitor stays, and (2) the proposed 25 additional campsites within Yosemite Valley would have an average occupancy rate of 95% between mid-April and mid-October, which would result in 4,300 additional camp-nights and 17,200 additional overnight stays (NPS 2000a).

Site-specific planning and detailed analysis for the Yosemite Lodge Area Redevelopment has not revealed new information that would warrant a revision of the previous impact assessment. As a result, the socioeconomic impact of the additional new lodging units is expected to be consistent with the impact analysis provided in the *Yosemite Valley Plan*. Similarly, *Yosemite Valley Plan* 95% future occupancy projections for the proposed upgraded facilities at Camp 4 are still applicable.

The socioeconomic impact analysis performed for the *Final Yosemite Valley Plan/SEIS* estimated the average daily overnight visitor spending to be $67.60 per capita in 2002 dollars (NPS 2000a). Based on this estimate, the visitor spending generated by the 6 additional lodging units would be $446,000. Nearly half of the overnight visitor's daily spending is estimated to be spent on lodging. Therefore, the daily per capita spending estimate for campers can be derived by adjusting the lodging cost in proportion to the campsite fee. Given a conservative average of four campers per

campsite and a cost of $18 per campsite, average daily camper spending would be $40.30 per day. The projected additional 17,200 overnight visitors camping at Camp 4 would generate $693,000 annually.

The total additional visitor spending associated with this alternative would be approximately $1.14 million per year. Yosemite visitor spending would affect both the trade and service industry sectors. The annual output from the region's combined retail and service industry was approximately $1,850 million in 2000 (expressed in 2002 dollars). Therefore, project-related visitor spending would represent a 0.06% increase in spending for the region's retail and service sectors, resulting in a long-term, negligible, beneficial impact on the regional economy.

Based on the IMPLAN multipliers (NPS 2000a), it is estimated that each $1 million of visitor spending generates 12 direct jobs in the region's economy. Thus, the 1.14 million of increased visitor spending would generate up to 14 direct jobs in the region, resulting in a long-term, negligible, beneficial impact on the region's economy.

In addition to this direct economic impact, it is estimated that each $1 million dollars of visitor spending could generate up to 18 indirect jobs and $1.6 million in indirect output in other sectors of the region's economy, based on the IMPLAN multipliers (NPS 2000a). Thus, an additional 21 indirect jobs and $1.8 million in output would be generated during peak project employment, resulting in a negligible beneficial impact on the regional economy.

Impact Significance. Regional, long-term, negligible, beneficial impact.

Operation-related Effects on Employee Housing. Under Alternative 2, the existing modular employee housing (82 beds) and employee cabins (8 beds) within the project area would be removed and employees would be relocated to an off-site location, consistent with the *Yosemite Valley Plan*. The extent of the potential adverse impact on employees associated with the increased commute distance would depend on the location of the new housing. The *Final Yosemite Valley Plan/SEIS* concluded that the need for employees to commute could represent a long-term, moderate, adverse impact, but also indicated that the improvement in housing quality associated with the new housing facilities could result in a long-term, major, beneficial impact (NPS 2000a). Given the uncertainty as to the location of future employee housing, it is expected that these two impacts would result in a local, long-term, negligible to minor, beneficial impact to employee housing.

Impact Significance. Local, long-term, negligible to minor, beneficial impact.

Summary of Alternative 2 Impacts. The combined effect of construction spending, visitor spending, and changes in employee housing is expected to result in a long-term, negligible to minor, beneficial impact to the socioeconomic environment. Impacts associated with construction and visitor spending would be beneficial to the regional socioeconomic environment, and impacts associated with employee housing would be beneficial to the local socioeconomic environment.

Cumulative Impacts

The cumulative impact analysis for socioeconomics under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 2 and the cumulative projects would result in regional, long-term, minor to moderate, beneficial impacts on the socioeconomic environment as a result of the additive effects of expected employment and spending increases associated with Alternative 2.

Impairment

Impairment is not addressed in the socioeconomic analysis, because this resource topic is peripheral to the protection of the park for future generations.

Transportation

Analysis

Construction-related Transportation Effects. The three-phase construction effort for Alternative 2 would have local, short- and long-term but temporary, adverse transportation impacts over the 13-year period from spring 2004 through fall 2016. The intensity and nature of the construction activity would vary over the 13-year construction period, and the range of adverse impacts to traffic flow and safety conditions would similarly vary. Adverse construction-related transportation impacts would primarily relate to temporary increases in traffic volumes on area roadways (including out-of-Valley roads) and in the number of turning movements between roadways and staging areas in proximity to the Yosemite Lodge Area Redevelopment site.

Construction activity would not occur continuously during the entire 13-year period. Rather, intensive Phase 1 construction activity would occur at the Lodge for a two-year period, followed by a several-year period of construction inactivity at the site. Subsequently, Phase 2 Camp 4 construction activity would occur during an intensive two- to three-year construction period, also followed by a several-year period of construction inactivity. Finally, intensive Phase 2 construction activity at the Lodge would occur over an approximately two-year period, concluding in fall 2016. During the multiple-year periods of construction inactivity, the Yosemite Lodge Area Redevelopment site would be fully functioning, with no visible signs of previous or upcoming construction activity.

During intense construction periods at Yosemite Lodge and Camp 4, there would be local, short- and long-term but temporary, moderate, adverse impacts to transportation conditions. Construction activities, including building and parking demolition, building construction and renovation, paving activities, and utility removal and installation, would generate varying numbers of vehicle trips (depending on the type of work) to accommodate construction workers, trucks, and equipment. Vehicle trips generated by a typical peak daily workforce of approximately 80 to 90 individuals (during 12 months of the Phase 1 construction period) would have readily apparent, but localized and temporary, adverse impacts on traffic flow and traffic safety in the project area. Intensive redevelopment activities during Phase 2 (over a 12-month period) would require a typical peak daily workforce of about 65 to 75 individuals.

All construction worker parking would be located outside Yosemite Valley, with the exception of approximately four to seven key supervisory personnel. Approximately 7 to 10 shuttle vans would transport construction personnel into and out of Yosemite Valley during Phases 1 and 2.

Shuttling of the construction personnel into and out of Yosemite Valley would reduce the level of added traffic on area roads.

Construction and demolition activities would generate an estimated total of 1,020 truck trips over the two-year period of Phase 1. Typical peak truck trips per day would range from 10 to 16 trips during one year of the construction period. Work during Phase 2 would similarly generate truck trips, with an estimated total of approximately 276 truck trips during the 10-year period, with a similar range of typical peak daily truck trips as cited above during intensive redevelopment activities.

Staging areas would be required to store materials and equipment for the project. The primary staging area, on the existing parking lot adjacent to the new cottages, cabins, and other buildings, would displace parking spaces used by visitors and employees. The National Park Service would ensure that interim parking is available for Yosemite Lodge and Camp 4 visitors during project construction. The secondary staging area would be near the proposed overnight bus parking area. The size and location of staging areas is expected to vary throughout the project duration. To minimize traffic impacts, deliveries of construction materials should be held at a checkpoint (the primary staging area) and should be restricted to one period of the day (e.g., 9:00 a.m. to 11:30 a.m.). Staging areas would be managed to restrict public access and maintain site safety.

Less intensive construction efforts at the project site would include construction of the Indian Cultural Center, and revegetation and restoration efforts. The less intensive construction efforts at the project site would have local, short- and long-term but temporary, minor, adverse impacts to transportation conditions. Restoration and revegetation work in Phase 3 would require a total of approximately 30 individuals working seasonally over a three-year period. Work during Phase 3 would generate few truck trips, with approximately 20 truck trips over the three-year period. The structures at the Indian Cultural Center would be constructed using traditional materials and methods to the extent possible, and revegetation and restoration activities would largely be done by hand with small, skilled work crews. Traffic flow and traffic safety would be minimally affected.

Construction-related traffic would cause a temporary and intermittent lessening of the capacities of area roadways because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. Mitigation measures would be employed to reduce transportation effects and would be made conditions of agreements with contractors. These measures are listed in Appendix C, Mitigation Measures Common to All Action Alternatives. Generally, these measures include implementation of a traffic control plan, which would involve measures (e.g., advance warning signs, and flaggers to direct traffic) to maintain safe and efficient traffic flow during the construction period. The mitigation measures would somewhat lessen the adverse construction-related impacts to traffic flow and traffic safety, but would not change the magnitude of the adverse effects. Therefore, the effect of increased traffic volumes associated with demolition and construction activities in the Yosemite Lodge Area Redevelopment vicinity would be minor to moderate, depending on the intensity of the construction activity and the traffic volumes on area roads used by construction-related vehicles during the redevelopment period.

Impact Significance After Mitigation Included in the Project. Local, short-term, minor to moderate, adverse impact.

Operation-related Effects on Traffic Flow Conditions. Under Alternative 2, the number of overnight accommodation facilities for visitors in the Yosemite Lodge Area Redevelopment site (lodging and campsites) would increase from that under Alternative 1, thus shifting the mix of park overnight visitors and day visitors (i.e., more visitors would be able to stay overnight in the park). With the number of park overnighters increased, less regional traffic (entering and leaving the park) would be generated, because the additional park overnighters would not need to make two trips per day between their out-of-park accommodations and attractions within the park. This would have a long-term, negligible, beneficial impact on traffic flow conditions at park entrances by slightly decreasing delays experienced by drivers in queues of backed-up vehicles. Conversely, the increase in the number of overnight accommodation facilities would increase traffic generated by overnight visitors on local roadways in the vicinity of the Yosemite Lodge Area Redevelopment site. This would have a long-term, negligible, adverse impact on traffic flow conditions on local roadways by slightly increasing delays experienced by drivers.

Under Alternative 2, employee housing would be relocated to an off-site location. An employee transportation program would be implemented to offset the number of commuter employee parking spaces removed from Yosemite Valley, as prescribed by the *Yosemite Valley Plan*. This would have a long-term, negligible, beneficial impact on traffic flow conditions on local roadways in the Valley by slightly decreasing delays experienced by drivers.

Northside Drive would be rerouted around the south side of Yosemite Lodge to reduce conflicts between vehicles and pedestrians along Northside Drive and to provide safer pedestrian access between the Lodge and Yosemite Falls. Realigned Northside Drive would continue to cross Yosemite Creek on historic Yosemite Creek Bridge. Vehicles would be routed through a roundabout west of Yosemite Creek Bridge to safely and expeditiously direct traffic south of the Lodge site. Realigned Northside Drive would have a posted speed of 15 to 20 miles per hour in the project area. Northside Drive would become a one-way (westbound) road after the last traffic turnaround on the Lodge site, and traffic would continue to use Northside Drive to exit Yosemite Valley. On occasion (during Indian Cultural Center special events), Northside Drive would be managed for two-way flow for limited traffic between the Indian Cultural Center and the above-cited last traffic turnaround on the Lodge site. However, due to the very limited number of parking spaces at the Indian Cultural Center, the volume of traffic that would use the two-way segment on those occasions would not be high.

Realigned Northside Drive would have the same number of travel lanes as under Alternative 1. While realigned Northside Drive would be the only road available for people who use either of two roads (Northside Drive or the roadway internal to the Yosemite Lodge area) under Alternative 1, there would be less day-visitor traffic and fewer conflict points (i.e., three instead of four intersections, with no intersection at the Lower Yosemite Fall area), and traffic flow would be noticeably smoother than under Alternative 1. Vehicle access to and from short-duration parking spaces near the Lodge's registration building, and to and from the central guest parking lot, would be provided by separate one-way roads for entering and exiting vehicles, thus improving traffic flow. In addition, upon entering the Lodge site, registering guests and tour bus traffic would be separated from other traffic (shuttle buses, maintenance vehicles, and Lodge guests seeking permanent parking). Vehicle access to and from the western guest parking lots for Lodge cabins and for Camp 4 would be provided via a two-way access road. The turning movements at the above-described access intersections along realigned Northside Drive would operate at a level of service D or better. Through-traffic on Northside Drive would operate at

level of service A on the traffic calming roundabout and through the Yosemite Lodge area. This would have a local, long-term, moderate, beneficial impact on traffic flow conditions in the Yosemite Lodge area by noticeably decreasing congestion and delays experienced by drivers.

Under Alternative 2, the number of parking spaces in the Yosemite Lodge area would be decreased from that under Alternative 1. Specifically, the day-visitor parking spaces (for automobiles and buses) would be removed, which would decrease traffic generated by day visitors on local roadways in the Yosemite Lodge area. Day visitors currently using these day-visitor auto parking spaces would be directed to the day-visitor parking spaces at Yosemite Village. Day visitors then would move between destinations in the Valley by shuttle bus, bicycle, or on foot. At the end of Phase 2, or when the Camp 4 expansion is complete and the Camp 4 parking lot is needed, the day-visitor buses could be parked in locations, as analyzed and disclosed in the *Lower Yosemite Fall Environmental Assessment* (NPS 2001b), or at a location identified by the transportation planning effort implementing actions outlined in the *Yosemite Valley Plan*. Alternative 2 would noticeably decrease congestion and driver delays in the Yosemite Lodge region caused by higher traffic volumes and the turning movements of conflicting traffic streams, resulting in a local, long-term, moderate, beneficial impact on traffic flow conditions on local roadways.

The proposed supply of parking spaces under Alternative 2 (i.e., one space per lodging unit, plus parking spaces to accommodate overnight guests who do not vacate their parking spaces immediately after checking out, plus disabled-access parking spaces), as well as the configuration of the guest parking lots, would be sufficient to accommodate overnight visitors. Parking would be located near guest lodging areas, which would provide short walking distances from parking spaces to lodging units. The central parking lot would be used by guests staying in the central Lodge area, and the smaller parking lot at the western end of the site would be used by guests staying in the cabins. Day visitors would be directed to the day-visitor parking spaces at Yosemite Village. The 40 short-duration loading/unloading parking spaces (20 spaces at the registration building and 20 spaces scattered near lodging units) would be designed to increase convenience to Lodge visitors and would reduce the need for guests to make multiple trips between their parked vehicle and their unit. The typical walking distances from parking lot to lodging unit would be similar to those described under Alternative 1, and the longest distance would be shorter than under Alternative 1. The loading/unloading spaces would require spot enforcement of time limits to ensure efficient use of those spaces. With guidance given to day visitors and enforcement of time limits for the loading/unloading parking spaces, the number and configuration of parking spaces under Alternative 2 would result in a local, long-term, moderate, beneficial impact on traffic flow conditions on local roadways by noticeably decreasing congestion and driver delays resulting from the turning movements of conflicting traffic streams.

Impact Significance After Mitigation Included in the Project. Local, long-term, moderate, beneficial impact.

Operation-related Effects on Traffic Safety/Conflicts. As stated above, under Alternative 2, Northside Drive would be rerouted around the south side of Yosemite Lodge to reduce conflicts between vehicles and pedestrians along Northside Drive and to provide safer pedestrian access between the Lodge and Yosemite Falls. Realigned Northside Drive would have the same number of travel lanes as Northside Drive under Alternative 1. While realigned Northside Drive would accommodate the traffic volumes that under Alternative 1 would be accommodated by Northside

Drive and the roadway internal to the Yosemite Lodge area, there would be three instead of four intersections, with fewer points of conflict (in particular, there would be no intersection at the Lower Yosemite Fall area). There would also be fewer crossings by pedestrians and bicyclists along the realigned Northside Drive than along the internal roadway within the Lodge area under Alternative 1, though the traffic volume on the realigned Northside Drive would be higher than on the existing internal road. This would have a local, long-term, minor, beneficial impact on traffic safety conditions in the Yosemite Lodge area by noticeably decreasing the potential for traffic safety hazards.

As stated above, under Alternative 2, the number of parking spaces in the Yosemite Lodge area would be decreased from that under Alternative 1. Specifically, the day-visitor parking spaces (for automobiles and buses) would be removed, which would decrease traffic generated by day visitors on local roadways in the Yosemite Lodge area. This would have a local, long-term, minor, beneficial impact on traffic safety conditions on local roadways by slightly decreasing the potential for traffic safety hazards.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, beneficial impact.

Summary of Alternative 2 Impacts. Alternative 2 would cause local, short-term, minor to moderate, adverse impacts (after mitigation) during site redevelopment; local, long-term, moderate, beneficial impacts to traffic flow conditions; and local, long-term, minor, beneficial effects on traffic safety/conflicts.

Cumulative Impacts

The cumulative impact analysis for transportation under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

The cumulative projects in Yosemite Valley would result in a regional, long-term, moderate, beneficial impact on transportation conditions within the park. The local, short-term, minor to moderate, adverse impact on transportation conditions from project construction activities would be offset by the beneficial impacts of the cumulative projects. The local, long-term, minor, beneficial effect on traffic flow and traffic safety would be enhanced by the beneficial impacts of the cumulative projects.

Impairment

Impairment is not addressed in the transportation analysis, because this resource topic is peripheral to the protection of the park for future generations.

Park Operations and Facilities

Analysis

Effects on Resources Management. The expansion of Camp 4 and development of a cooking pavilion at Camp 4 would have a local, long-term, moderate, adverse effect on resources management personnel due to the increased number of human/bear conflicts. Restoration and revegetation elements of Alternative 2 would have an adverse effect on the resources management division during project construction, due to the time and resources these project elements would require. Restoration efforts would be concentrated in Phase 3, which consists entirely of

restoration-related activities (see figure II-13), although some revegetation activities would also take place during Phases 1 and 2. Approximately 37.89 acres would be restored. During Phase 1, approximately half of the Lodge site would be revegetated. During Phase 2, the remaining area of the Lodge site, Camp 4, and the Indian Cultural Center would be revegetated. During Phase 3, three main areas of the project site would be restored and the remainder of the project area would be revegetated (see figure II-13). Because Alternative 2 would restore and revegetate portions of the native ecosystem, intensive long-term maintenance would not be necessary to ensure the long-term viability of restored areas. However, minor levels of monitoring and maintenance would be required due to the high volume of park visitors in this area.

Impact Significance. Local, long-term, moderate, adverse impact.

Effects on Interpretation Services. Alternative 2 would have a minor adverse impact on interpretation services, because the increased capacity of both Yosemite Lodge and Camp 4 would result in increased visitation to the park and demand for interpretation services. The increase in visitor numbers would be minor relative to existing visitation in Yosemite Valley and projected visitation without the project. In addition, the increase in the size of the amphitheater, from a capacity of 150 to 200 individuals to 300 to 350 individuals, would place increased demands on this park division to provide interpretive programming for larger audiences. The adverse effects would be somewhat offset by improved interpretation facilities that would be provided under Alternative 2, such as the expansion of the Cliff Room and the functional, acoustical, and aesthetic improvements to the proposed amphitheater. These facility improvements would enhance the ability of interpretation services division to provide interpretive programs to larger audiences.

Impact Significance. Local, long-term, minor, adverse impact.

Effects on Concessioner Management. During the 13-year construction period of the Yosemite Lodge Area Redevelopment, concessioner management would experience a clearly detectable increase in demands on staff due to coordination with and management of the concessioner. Alternative 2 would have a negligible adverse impact on concession management because of the small increase in capacity and facilities at Yosemite Lodge (e.g., six additional lodging units and no additional food or retail services). The net effect of this alternative on the concessioner management division would be long term and minor.

Impact Significance. Local, long-term, minor, adverse impact.

Effects on Facilities Management. Alternative 2 would have a local, long-term but temporary, moderate, adverse effect on the facilities management division during project construction, due to the considerable time and resources these activities would require during Phases 1 and 2. Old utility lines would be removed, abandoned, or replaced, as needed, at Yosemite Lodge and Camp 4, and new lines would be constructed to new facilities at Yosemite Lodge, Camp 4, and the Indian Cultural Center. During Phase 1, new propane, water, and sewer lines would be constructed at Yosemite Lodge and the Indian Cultural Center. During Phase 2, new propane, water, and sewer lines would be constructed at Camp 4 and other areas of Yosemite Lodge, and the electrical substation at Camp 4 would be removed. New underground electrical lines would be constructed at Yosemite Lodge, Camp 4, and the Indian Cultural Center during Phases 1 and 2. Over the course of project construction, approximately 3,045 linear feet of old utility lines would

be removed (electric, propane, sewer, and water lines at Yosemite Lodge and a sewer line to the former gas station next to Camp 4), and 9,000 linear feet of utilities would be abandoned in place. In general, existing lines would be abandoned in place in areas where service is no longer required and physically removed where conflicts exist with the proposed site plan or where existing lines no longer provide the required service reliability. Over the long term, the upgrade and replacement of utility infrastructure at Yosemite Lodge and Camp 4 would reduce the demand for emergency repairs and the more frequent maintenance services currently imposed by the aging utilities, thus reducing some demand on facilities management.

Alternative 2 would also have a local, long-term, moderate, adverse effect on facilities management due to the addition of new facilities at the Indian Cultural Center and Camp 4 that would increase the demand for ongoing custodial and solid waste services as well as routine maintenance and repair. The Camp 4 expansion would approximately triple the number of toilets, double the number of campsites, and add new shower facilities and a cooking pavilion, all of which would require regular cleaning and maintenance. New facilities at Yosemite Lodge would also require routine maintenance and repair. Because the new utilities would continue to require routine maintenance, and new facilities would be added, the net effect of the changes on facilities management under Alternative 2 would be local, long term, moderate, and adverse.

In addition, during winter months the expanded trail system in the project area (i.e., an increase of 2,100 linear feet), expanded parking area (i.e., an overall increase of 26 parking spaces due to additional parking for Camp 4 and the Indian Cultural Center), the new Indian Cultural Center site, and expanded Camp 4 facilities would impose new maintenance demands for snow removal on facilities management staff. This adverse effect on facilities management would contribute to the minor adverse effect associated with Alternative 2.

Impact Significance. Local, long-term, moderate, adverse impact.

Effects on Visitor Protection. Alternative 2 would expand Yosemite Lodge and Camp 4 facilities and would develop an Indian Cultural Center. The new facilities would increase staffing demands for visitor protection personnel associated with the larger number of visitors to the project area. The reduction in the number of guest parking spaces at Yosemite Lodge from 464 to 401 spaces would occasionally increase the need for ranger patrols to resolve parking conflicts during busy periods. These additional demands on visitor protection staff would be clearly detectable, resulting in a moderate adverse impact.

Alternative 2 would upgrade the water delivery system and ensure the continued adequacy of firefighting capacity of the water supply. The water system would be designed and constructed to maintain a minimum residual pressure of 20 pounds per square inch during peak demand while also meeting fire flow requirements. The propane tank sites (at the Indian Cultural Center and west end of Yosemite Lodge, as shown in figure II-7) would conform to the International Fire Code and would be located outside of the base of talus zone and the 100-year floodplain, at a safe distance from proposed buildings. Each building to be connected to the propane system would be equipped with an above-grade shutoff valve, an earthquake valve, and gas pressure regulators. All site structures would be constructed according to current Yosemite Safety Policy on Fire Prevention, the National Fire Prevention Association Fire Prevention Code, the International Building Code, and all other applicable regulations and standards. Each building requiring fire sprinklers would have a dedicated fire line service from the site water distribution system,

including a post indicator valve and required fire department connection. The system would include backflow prevention devices (Provost & Pritchard 2003). Site design would include appropriate emergency access and fires lanes. Fire hydrant locations and access to the hydrants would be coordinated in consultation with the Yosemite Fire Prevention Office.

Because water capacity and delivery systems would be upgraded and new structures would meet current codes and standards, Alternative 2 would result in a beneficial effect on visitor protection staff in the event of a fire in the Yosemite Lodge area. Restoration efforts during Phase 3 would include prescribed burns that would remove fuel that has accumulated as a result of past fire suppression practices, contributing to the beneficial effects of this alternative on visitor protection services.

The realigned segment of Northside Drive would be located within the 100-year floodplain of the Merced River, which could impede the movement of emergency vehicles as well as the ability of park visitors to safely and expeditiously leave the park during a major flood. During a flood that affected the realigned roadway, traffic exiting Yosemite Valley would be rerouted to the proposed multi-use paved trail, which would be maintained at a sufficient width and in sufficient condition to be used for this purpose. Rerouting visitor traffic and ensuring adequate access by emergency vehicles to areas of the park east and west of the affected segment during a major flood event would place additional demands on visitor protection staff during an emergency situation. These additional demands on visitor protection staff would be clearly detectable, resulting in a moderate adverse impact.

The moderate adverse effect associated with increased demands on visitor protection staff due to new site facilities and reduced parking spaces would be somewhat offset by the beneficial effect of the visitor safety improvements. The infrequency of flood events that would affect the realigned segment of Northside Drive would somewhat reduce the short-term, moderate, adverse effects associated with rerouting Northside Drive during a major flood.

Impact Significance. Local, short-term and long-term, minor, adverse impact.

Summary of Alternative 2 Impacts. Overall, Alternative 2 would have a local, long-term, moderate, adverse impact on park operations and facilities due to additional staff demands associated with the new facilities and improvements (including restoration and revegetation) in the project area and the increase in the number of visitors that would be accommodated by these facilities. The adverse effect on park operations of Alternative 2 would be partially offset by the beneficial impacts associated with improvements to the existing utility system.

Cumulative Impacts

The cumulative impact analysis for park operations under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 2 and the cumulative projects would have a regional, long-term, moderate, adverse impact on park operations and facilities. The adverse impact associated with Alternative 2, including additional demands on park operations staff, would contribute to the adverse effect of increased demand for park operations services and facilities of the cumulative projects.

Impairment

Park operations are not addressed in the impairment analysis, because this resource topic is peripheral to the protection of the park for future generations.

Hazardous Materials

Analysis

Effects of Hazardous Materials Management. The project would have a long-term but temporary, moderate, adverse impact during Phase 1 and Phase 2 demolition and construction activities, due to the potential use of heavy equipment that could leak toxic fluids, and to the use of such materials as solvents and fuels. Use of equipment and hazardous materials without appropriate precautions could result in accidental spills and the off-site release of hazardous materials.

Implementation of mitigation measures specified in Appendix C, Mitigation Measures Common to All Action Alternatives, including the repair of all petroleum leaks on equipment to be used prior to work within the park, the tightening of hydraulic hoses and regular inspections to ensure they are in good condition, and ensuring that all construction equipment is kept within delineated work limits, as well as implementation of a spill prevention and pollution control program for hazardous materials (see Appendix C), would reduce the magnitude of this adverse effect to local, long term, temporary, and minor.

Some hazardous materials also would be used for routine maintenance and operations at the Yosemite Lodge site. The level of use would be comparable to existing levels, if not somewhat less. Incorporation of sustainable building concepts into the design, construction, and operation of the new facilities, as specified in National Park Service management polices, may somewhat reduce the quantities of hazardous materials needed for site maintenance and operations relative to those currently used. Alternative 2 includes new maintenance and storage structures that would allow for the appropriate management of hazardous materials. Housekeeping chemicals would be stored at the new housekeeping and maintenance buildings, and other hazardous materials would be stored at the concessioner's central warehouse in Yosemite Village. Mitigation measures included as part of the project, including compliance with applicable regulations (see Appendix C, Mitigation Measures Common to All Action Alternatives), would substantially reduce the magnitude of the identified impact.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible, adverse impact.

Effects of Underground Storage Tanks and Hazardous Materials. Although the known, unused underground fuel tanks have been removed, unknown tanks could remain. National Park Service staff familiar with the project site and the former gas station near the loading dock at Yosemite Lodge indicate that tanks associated with the gas station could remain. In addition, National Park Service staff indicate that, although unlikely, an underground tank could exist near the restroom building at Camp 4. Alternative 2 proposes the construction of new housekeeping and storage facilities in the vicinity of the former gas station. It is likely that any underground fuel tanks remaining in the area would be discovered during grading and excavation activities associated with facilities construction. However, it is possible that an underground tank would remain undetected during construction, resulting in a moderate adverse impact due to tank vapor emissions entering the overlying structures and/or leaking fuel contaminating the surrounding soils and groundwater. The existence of any underground storage tanks remaining in the vicinity

of the kitchen loading dock or the Camp 4 restroom could be determined by a focused magnetometer and ground-penetrating radar survey at these two locations. Mitigation measures included as part of the project (see Appendix C, Mitigation Measures Common to All Action Alternatives) would reduce the magnitude of the identified adverse impact by ensuring that any tanks remaining in these two areas would be removed prior to project construction and that appropriate procedures would be followed in the event that unknown tanks elsewhere at the project site were discovered during construction.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, adverse impact.

Effects of Current Remediation Sites. Under Alternative 2, the site of the former gas station would primarily be developed as a westward extension of the existing Camp 4 parking lot. A portion of the site along Northside Drive would be restored and revegetated, bicycle storage facilities would be located near the northwestern corner of the former gas station site, and a campground kiosk would be located north of the site. No permanent residences or other structures would be located at either of the remediation sites. As with Alternative 1, the Regional Water Quality Control Board would oversee the groundwater remediation activities at the two remediation sites. The development proposed under Alternative 2 would not commence until the Regional Water Quality Control Board determined that the sites had been appropriately remediated for the proposed uses, and the cases were closed. Therefore, the impact of the proposed development at the remediation sites would be negligible and beneficial.

Impact Significance. Local, long-term, negligible, beneficial impact.

Effects of Asbestos-containing Materials, Lead-based Paint, and PCBs. Site assessments have established that some buildings to be demolished under this alternative contain asbestos materials. Indiscriminate and unmitigated demolition of structures containing asbestos could create asbestos dust that could travel off site, presenting an inhalation hazard for both construction workers and the public. In addition, collection and disposal of asbestos-containing materials by untrained personnel could result in asbestos dust emissions off site. Removal of electrical substation transformers and capacitors prior to draining any PCB-containing fluids could result in the release of PCBs to the environment, and exposure of the public to PCBs after the substation is removed. These actions would have a short-term, moderate, adverse impact on the environment.

Mitigation measures included as part of the project, including compliance with applicable regulations (see Appendix C, Mitigation Measures Common to All Action Alternatives), would reduce the magnitude of the identified impact to negligible.

Impact Significance After Mitigation Included in the Project. Local, short-term, negligible, adverse impact.

Summary of Alternative 2 Impacts. Construction activities could result in releases of hazardous materials, resulting in a moderate adverse impact to the environment. Implementation of mitigation measures, such as a spill prevention and pollution control program, preconstruction surveys, and compliance with applicable hazardous materials management regulations, would reduce the magnitude of the adverse impact to negligible to minor. Overall, Alternative 2 would have a local, long-term, negligible, adverse impact on the environment. The beneficial impact of

siting new Camp 4 facilities at a remediated site would partially offset the adverse effect of potential releases of hazardous materials into the environment.

Cumulative Impacts

The cumulative impact analysis pertaining to hazardous materials under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 2 and the cumulative projects would result in a regional, long-term, minor, adverse impact on the environment. Alternative 2 would negligibly contribute to the adverse effects of the cumulative projects associated with the use, storage, or accidental release of hazardous materials during construction of the cumulative projects.

Impairment

Alternative 2 would have a local, long-term, negligible, adverse impact on the environment. These effects would be localized and would not be considered severe. Therefore, Alternative 2 would not impair park resources within Yosemite National Park.

Alternative 3

Natural Resources

Geology, Geologic Hazards, and Soils

Analysis

Operation-related Effects of Seismic Safety. The Yosemite Lodge Area Redevelopment site would be as susceptible to earthquake ground shaking under Alternative 3 as it would under Alternative 1. Impacts related to seismic safety under Alternative 3 are essentially the same as described under Alternative 2. Under Alternative 3, new construction of Lodge facilities and guest lodging units would comply with modern building codes that incorporate improved earthquake engineering design criteria. However, the improved structural integrity of the new buildings would not preclude the potential for damage, furniture upset, or injury during a seismic event. Similar to Alternative 1, the National Park Service would continue to avoid locating facilities in areas where such facilities could be directly affected by secondary effects of ground shaking, and would continue the practice of conducting site-specific geologic analysis prior to the construction of buildings and other facilities to determine potential soil instability.

Impact Significance. Local, long-term, negligible, beneficial impact.

Operational Effects of Rockfall Hazards. The potential for rockfall hazards in Yosemite Valley would be the same under Alternative 3 as under Alternatives 1 and 2. Impacts related to rockfall hazards under Alternative 3 are essentially the same as described under Alternative 2, as the Camp 4 facilities would be relocated out from the base of talus zone to an area within the shadow line zone, and the Indian Cultural Center at the west end of Camp 4 would be developed near the base of the granite cliffs. The community building associated with the Indian Cultural Center would be located outside the base of talus zone, while the umachas, roundhouse, and sweatlodge would be placed throughout the Indian Cultural Center site, some within the base of talus zone and some within the shadow line zone. As the umachas, roundhouse, and sweatlodge are

considered miscellaneous structures, their placement within the base of talus zone would be consistent with the *Geologic Hazard Guidelines*, as no other practicable alternative exists at the site.

Impact Significance. Local, long-term, moderate, adverse impact.

Construction-related Effects on Soils. Construction-related effects on soils at the Yosemite Lodge Area Redevelopment site are the same under Alternative 3 as those described for Alternative 2. Construction of Alternative 3 would include temporary grading and construction activities, causing erosion of exposed soil. Temporary construction-related erosion could occur during periods of rain, while soil is exposed, and prior to the site restoration and cleanup phases of the project. This would result in local, short-term, moderate, adverse impact.

As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, mitigation to reduce erosion includes compliance with federal and state regulations to develop and implement a comprehensive stormwater pollution prevention plan for construction activities (i.e., erosion control and stormwater pollution prevention measures to limit soil erosion and maintain sediment control). In addition, mitigation would include limiting import stockpiles during construction and protecting native foliage. Soil degradation would be minimal due to erosion controls and the intermittent nature of the grading activities. Implementation of mitigation measures would reduce adverse effects on soils to negligible to minor.

Impact Significance After Mitigation Included in the Project. Local, short-term, negligible to minor, adverse impact.

Operation-related Effects on Soils. Operation-related effects on soils at the Yosemite Lodge Area Redevelopment site are the same under Alternative 3 as those described for Alternative 2. Under Alternative 3, approximately 37 acres in three areas within the Yosemite Lodge Area Redevelopment area would be restored by reducing areas that are currently contributing to erosion, soil compaction, and removal of surface soils, and reversing impacts to sensitive soils susceptible to compaction and erosion. Revegetation programs proposed under Alternative 3 would reverse the current rate of soil loss in the exposed areas.

Impact Significance. Local, long-term, minor, beneficial impact.

Summary of Alternative 3 Impacts. As under Alternative 2, soil degradation associated with construction activities under Alternative 3 would occur through each project phase and would result in a local, short-term, moderate, adverse impact. As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, standard mitigation including erosion controls and native foliage protection would reduce the construction-related impacts to a negligible to minor intensity. Overall, Alternative 3 would have a local, long-term, negligible, beneficial impact. The beneficial impacts of Alternative 3 associated with restoration and revegetation activities, improved seismic safety associated with new building construction, and relocation of essential facilities outside the base of talus zone would offset adverse effects associated with construction impacts, hazards from unavoidable seismic ground shaking, and continued placement of facilities within the base of talus and shadow line zones.

Cumulative Impacts

The cumulative impact analysis for geologic resources and soils under Alternative 3 is the same as described for Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 3 and the cumulative projects would result in a regional, long-term, moderate, beneficial impact with respect to overall seismic safety and the reduction of rockfall hazards; although the earthquake and rockfall hazards remain largely unchanged at the Yosemite Lodge Area Redevelopment site under Alternative 3, other projects within the Valley and implementation of the *Geologic Hazard Guidelines* would reduce the overall risk of geologic hazards. The regional, long-term, moderate, beneficial impact to soil resources under the cumulative projects would add to the soil restoration proposed under Alternative 3, resulting in a net regional, long-term, moderate, beneficial impact to soil resources.

Impairment

Overall, Alternative 3 would have a local, long-term, negligible, beneficial impact on geologic resources and soils. Therefore, Alternative 3 would not impair geologic resources for future generations.

Floodplains and Water Resources

Analysis

Construction-related Effects on Surface Water Quality. As with Alternative 2, stormwater runoff originating from construction-disturbed areas under Alternative 3 could become laden with sediment or pollutants from eroded soils or hazardous materials, resulting in a moderate adverse impact.

As described for Alternative 2, mitigation under this alternative includes compliance with federal and state regulations to develop and implement a comprehensive stormwater pollution prevention plan (see Appendix C, Mitigation Measures Common to All Action Alternatives). With implementation of mitigation measures, Alternative 3 would have a local, short-term, negligible, adverse impact on surface water quality.

Impact Significance After Mitigation Included in the Project. Local, short-term, negligible, adverse impact.

Impact to the Merced River Floodplain. Under Alternative 3, guest lodging and Lodge facility buildings would be removed from the portion of the Merced River 100-year floodplain located between the central Lodge area and the Merced River. Potential floodplain impacts at the Yosemite Lodge Area Redevelopment site would be the same under Alternative 3 as those described for Alternative 2.

Impact Significance. Local, long-term, minor, beneficial impact.

Impacts of Human-made Flow Diversions. Under Alternative 3, the diversion dam and riprap revetments would be removed to restore the natural flood regime of the Merced River within the project area. Impacts related to human-made flow diversions under Alternative 3 are essentially the same as described under Alternative 2. See the discussion of impacts under Alternative 2.

Impact Significance. Local, long-term, minor, beneficial impact.

Impacts of Drainages and Impervious Surfaces. Under Alternative 3, the drainage system would be improved as described for Alternative 2. Compared to Alternative 1, Alternative 3 would increase impervious surfaces in the Yosemite Lodge Area Redevelopment site by approximately 191,800 square feet (4.4 acres), while decreasing pervious surfaces by approximately 147,900 square feet (3.3 acres). Semipervious surfaces would decrease by approximately 44,100 square feet (1.0 acre). Within the 100-year floodplain, Alternative 3 would increase impervious surfaces by approximately 114,500 square feet (2.6 acres) over the impervious surface area in Alternative 1, and decrease semipervious surfaces by approximately 70,800 square feet (1.6 acres) (see table II-1 in Chapter II, Alternatives). As described under Alternative 2, the increase of impervious surfaces both in the project site and the floodplain would further reduce natural infiltration and consequently reduce recharge to the shallow water table. Decreased infiltration could also affect adjacent wetlands by reducing underflow to the wetland.

Impervious Surface Area in the Yosemite Lodge Area Redevelopment Site. Under Alternative 1, approximately 16% of the total area at the project site is impervious, 6% is semipervious, and 78% is pervious. Under Alternative 3, approximately 20% would be impervious, 5% semipervious, and 75% pervious. As with Alternative 2, the changes in pervious, impervious, and semipervious surface areas within the site would not represent a substantial change, considering the overall size of the project area and other proposed restoration efforts. The impact to water resources would be similar to that described under Alternative 2.

Impervious Surface Area in the Floodplain. Under Alternative 1, 6% of the 100-year floodplain is covered with impervious surfaces and 4% with semipervious surfaces. Under Alternative 3, approximately 12% of the floodplain would be impervious surfaces and approximately 1% would be semipervious surfaces. As described in Alternative 2, the overall increase in impervious and semipervious floodplain surface area could be realized as reduced lateral underflow of groundwater to wetlands, localized water level decreases in the shallow water table, or increased overland flow of stormwater. Stormwater flow increases could also lead to increased surface soil erosion.

Impact Significance. Local, long-term, minor, adverse impact.

Operation-related Effects on Surface Water Quality. Under Alternative 3, surface water quality would be improved over current conditions. Impacts related to surface water quality under Alternative 3 would be essentially the same as described under Alternative 2. See the discussion of impacts under Alternative 2.

Impact Significance. Local, long-term, minor, beneficial impact.

Summary of Alternative 3 Impacts. As with Alternative 2, stormwater runoff from construction sites would result in a moderate adverse impact to surface water quality. Implementation of mitigation measures, including development of a comprehensive stormwater pollution prevention plan (see Appendix C, Mitigation Measures Common to All Action Alternatives), would reduce the intensity of the construction-related impacts to negligible. Overall, Alternative 3 would have a local, long-term, minor, beneficial impact on floodplains and water resources. The beneficial impacts associated with removal of major flow impediments from the 100-year floodplain; removal of the diversion dam and revetments from the banks of Yosemite Creek to return the 100-year floodplain to near-natural, free-flow conditions; and improvements to the

drainage system would largely offset the adverse effects associated with construction-related stormwater runoff and increased impervious surface area at the project site.

Cumulative Impacts

The cumulative impact analysis for floodplains and water resources under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

The past, present, and future projects considered cumulatively with the Alternative 3 would have a regional, long-term, moderate, beneficial effect on hydrologic processes and water quality, because the removal of flow impediments and improvements to the drainage system under Alternative 3 would contribute to the long-term beneficial effects associated with the overall effort to improve water resources in Yosemite Valley and return natural flow to river and tributary systems. The beneficial impacts would offset the adverse construction- and development-related impacts associated with Alternative 3 and the cumulative projects.

Impairment

Alternative 3 would result in a local, long-term, minor, beneficial impact on floodplains and water resources. Therefore, Alternative 3 would not impair these resources within Yosemite National Park for future generations.

Wetlands

Analysis

Construction-related Effects on Wetlands. Impacts related to wetlands under Alternative 3 would be similar to those described under Alternative 2, with the exception that Alternative 3 would disturb 0.41 acres of wetlands (i.e., riverine intermittent drainages) due to installation and removal of utilities and development of project facilities, including parking areas, roadways, and trails, resulting in a local, long-term, moderate, adverse impact. No wetland waters of the U.S. would be affected under Alternative 3.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor, adverse impact.

Enhancement-related Effects on Wetlands. Enhancement-related impacts on wetlands would be similar to those described under Alternative 2, with the exception that Alternative 3 would restore 37.31 acres in the same areas as proposed under Alternative 2, resulting in a local, long-term, negligible to minor, beneficial impact on wetlands.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible to minor, beneficial impact.

Summary of Alternative 3 Impacts. Construction activities associated with Alternative 3, including installation and removal of utilities and development of project facilities, would have a moderate adverse impact due to disturbance of 0.41 acres of wetlands (specifically, riverine intermittent drainages). With implementation of mitigation measures (including wetland replacement, spill prevention and pollution control measures, and wetland protection and compensation measures, such as installing protective fencing material to protect wetlands from construction activities, using silt fencing to reduce erosion, etc.), as described in Appendix C,

Mitigation Measures Common to All Action Alternatives, construction impacts to wetlands would be lessened to a minor adverse effect. Overall, Alternative 3 would have a local, long-term, negligible to minor, beneficial impact on wetlands. The beneficial effects associated with restoration and revegetation under this alternative would offset the adverse construction-related impacts.

Cumulative Impacts

The cumulative impact analysis for wetlands under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1. Overall, the cumulative projects would have a regional, long-term, major, beneficial impact on Yosemite Valley wetlands associated with the comprehensive planning and restoration efforts.

Alternative 3 and the cumulative projects would result in a local, long-term, major, beneficial impact with respect to wetlands. The beneficial impacts associated with the restoration and revegetation efforts under Alternative 3 would positively contribute to the Valleywide restoration efforts.

Impairment

Alternative 3 would result in a local, long-term, negligible to minor, beneficial effect on wetlands and would therefore not impair wetland resources for future generations.

Vegetation

As discussed in Chapter III, Affected Environment, most of the project site has been previously disturbed, based on the presence of exposed bare ground, European annual grasses, and herbaceous species that favor disturbed open areas. Developed upland plant communities cover the largest area with in the project site, with incense-cedar being the dominant plant species. Conifers (including incense-cedar and ponderosa pine) have invaded much of the project site due to modified hydrology and nearly 100 years of fire suppression. As a result, conifers have changed forests, meadows, and riparian areas from open, diverse communities to unnaturally large monocultures of shade-tolerant species.

Analysis

Construction-related Effects on Vegetation. Impacts related to vegetation associated with tree removal and potential construction-related vegetation trampling effects under Alternative 3 are similar to those described under Alternative 2, with the exception that Alternative 3 would remove 1,036 trees, which is 22% of existing trees in the project area. These trees would be removed primarily from developed plant communities for public safety, construction of facilities, and historic view corridor and forest management,[3] resulting in a local, long-term, minor, adverse impact. As with Alternative 2, forest management tree removal would be conducted in an effort to restore meadow vegetation and reduce conifer encroachment. The number of trees to be removed for historic view corridor maintenance, forest management, and hazard tree safety is same as proposed under Alternative 2. Alternative 3 proposes removal of 618 trees for development which is 13% of existing trees in the project area, including 42 oaks, 34 maples, 153 pines, 301 incense-cedars, 14 firs, and 74 miscellaneous trees (see Appendix B, Tree Management).

[3] Forest management includes removing colonizing trees from the restoration area in an effort to restore meadow habitat, including the removal of non-native trees.

With implementation of mitigation measures (e.g., installing temporary fencing to protect remaining trees and highly sensitive biological resources, controlling and minimizing invasive non-native species, implementing revegetation measures to restore disturbed areas, and implementing a natural resource program to monitor sensitive biological resources and minimize impacts), as described in Appendix C, Mitigation Measures Common to All Action Alternatives, the magnitude of adverse impacts to vegetation associated with Alternative 3 would remain minor.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, adverse impact.

Enhancement-related Effects on Vegetation. Similar to Alternative 2, Alternative 3 would restore 37.31 acres, resulting in a local, long-term, minor, beneficial impact on vegetation. The restoration efforts and beneficial effects would be the same as those described under Alternative 2.

Like Alternative 2, the landscape of the Yosemite Lodge Area Redevelopment site would be revegetated based upon the principles described in the *Comprehensive Landscape and Revegetation Plan for Yosemite Lodge* (NPS 1999b) using an applied ecological approach to revegetation.

Implementation of restoration and revegetation efforts along with biological resource protection measures (e.g., installing temporary fencing to protect remaining trees and highly sensitive biological resources, controlling and minimizing invasive non-native species, implementing revegetation measures to restore disturbed areas, and implementing a natural resource program to monitor sensitive biological resources and minimize impacts), described in Appendix C, Mitigation Measures Common to All Action Alternatives, would improve species diversity, link previously unconnected riparian and meadow vegetation, increase regeneration of California black oak, reduce conifer encroachment and the spread of non-native species, limit habitat fragmentation by removing trails and some roads, and minimize human-related effects, such as trampling, by restricting human activities to designated areas.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, beneficial impact.

Summary of Alternative 3 Impacts. Compared to Alternative 1, Alternative 3 would alter the size, integrity, and continuity of vegetation due to the removal of 1,036 trees and potential construction-related vegetation trampling effects, resulting in a local, long-term, minor, adverse impact. Implementation of biological resource protection measures (such as e.g., installing temporary fencing to protect remaining trees and highly sensitive biological resources, controlling and minimizing invasive non-native species, and implementing revegetation measures to restore disturbed areas) as described in Appendix C, Mitigation Measures Common to All Action Alternatives, would somewhat offset this adverse effect although the impact would remain minor. Overall, Alternative 2 would have a local, long-term, negligible to minor, beneficial impact because the restoration and revegetation efforts would offset the adverse construction-related effect associated with tree removal.

Cumulative Impacts

The cumulative impact analysis for vegetation under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1. The cumulative projects would increase the size, connectivity, and integrity of vegetation within the project area, resulting in a regional, long-term, moderate, beneficial effect on vegetation.

Alternative 3 and the cumulative projects would result in a regional, long-term, moderate, beneficial impact with respect to vegetation, because efforts to restore and revegetate developed and/or disturbed areas within the Valley and the project site would offset adverse impacts related to construction and increased development.

Impairment

Alternative 3 would have a local, long-term, negligible to minor, beneficial impact on vegetation and therefore would not impair vegetation resources for future generations.

Wildlife

Analysis

As discussed in Chapter III, Affected Environment, the primary wildlife habitat type in the project area is urban. The high level of ongoing human disturbance, such as human presence and high noise levels from cars and buses, greatly reduces the value of urban habitat for local wildlife. The Yosemite Lodge as well as large portions of Northside Drive, Camp 4, and the Indian Cultural Center are located within urban habitat.

Construction-related Effects on Wildlife. Similar to Alternative 2, construction activities associated with Alternative 3 would result in a local, short- and long-term but temporary, moderate, adverse impact to wildlife. Activities that decrease the amount and distribution of wildlife habitat or the size, connectivity, or integrity of wildlife habitat would adversely affect wildlife. Project activities that increase habituation of wildlife to humans, cause incidental mortality of wildlife species, or disrupt breeding or foraging behavior would also adversely affect wildlife.

The removal of 1,036 trees or snags could affect breeding birds or bats by destroying nests or causing injury or mortality to individuals. Noise and human disturbance during construction activities adjacent to active bird nests or bat roosts could adversely affect these wildlife species and result in nest/roost abandonment and loss of young and reproductive potential. During site grading and excavation, small mammals could become entrapped in trenches or pits. Operation of heavy equipment could result in mortality of amphibians, reptiles, or small mammals. In addition, removal of the Yosemite Creek diversion dam could temporarily increase sediment levels in the Merced River and Yosemite Creek and adversely affect aquatic wildlife by decreasing water quality in these habitats.

Construction crews would range in size from 30 individuals in Phase 3 to 85 to 95 individuals in Phase 1, similar to Alternative 2. Under Alternative 3, the magnitude of the adverse impact associated with Phase 1 construction would be the same as that identified for Alternative 2. As with Alternative 2, the intensity of Phase 2 adverse impacts under Alternative 3 would be less than under Phase 1, because fewer construction crews and less heavy equipment would be required.

Construction-related activities under Phase 3 would be identical to those described for Alternative 2, resulting in the same effects on wildlife.

Construction-related activities under Alternative 3 would have minor to moderate adverse effects on wildlife. Implementation of preconstruction wildlife surveys, avoidance of construction activities adjacent to active bird nests and bat roosts during the breeding season, food and waste removal, and other measures (see Appendix C, Mitigation Measures Common to All Action Alternatives) would reduce the magnitude of construction-related effects on wildlife to minor.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor, adverse impact.

Construction-related Effects on Black Bears. Construction-related impacts on black bears would be similar to those described under Alternative 2, constituting a minor adverse effect. The implementation of measures identified for Alternative 2, such as food and waste removal (see Appendix C, Mitigation Measures Common to All Action Alternatives), would reduce the magnitude of construction-related effects on black bears to negligible.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, negligible, adverse impact.

Operation-related Effects on Wildlife. Operation-related effects on wildlife under Alternative 3 are similar to effects described under Alternative 2. The development of new lodging at Yosemite Lodge, expansion of Camp 4, and creation of the Indian Cultural Center would continue to fragment habitat and increase human presence in currently disturbed areas, as described under Alternative 1, as well as in some adjacent undisturbed areas. Alternative 3 would have similar indirect impacts associated with bullfrogs, as described under Alternative 2.

As with Alternative 2, restoration and revegetation of the Yosemite Lodge Area Redevelopment site would have a beneficial effect on wildlife and highly valued resources in the long term. Species that rely on diversity of habitats and their connections, such as black phoebes, Cooper's hawks, and Pacific tree frogs, would benefit from these activities, though much of these areas would continue to be affected by adjacent human use and the realignment of Northside Drive. Modification of Northside Drive to a multi-use paved trail would reduce traffic disturbance to upland habitats and wildlife north of Yosemite Lodge. In addition, removal of the Yosemite Creek diversion dam would benefit aquatic wildlife by restoring the natural hydrology of the area. Overall, operation of Alternative 3 would result in a local, long-term, negligible, beneficial impact to wildlife.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible, beneficial impact.

Operation-related Effects on Black Bears. Similar to Alternative 2, habitat fragmentation, increased human presence, and the expansion of campsites at Camp 4 could adversely affect black bears as well as other wildlife, resulting in a moderate adverse impact. Alternative 3 does not include gear lockers or a cooking pavilion as part of the Camp 4 expansion. Food left by visitors currently attracts black bears to the project site. Food and waste removal and other measures

developed in coordination with the Bear Management Council to reduce the amount of food available for black bears (see Appendix C, Mitigation Measures Common to All Action Alternatives) would reduce operation-related effects on black bears. With implementation of these measures, the accidental attraction of black bears to the project site and increased human/bear conflicts would be considered a long-term, minor, adverse effect.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, adverse impact.

Summary of Alternative 3 Impacts. Similar to Alternative 2, construction-related activities under Alternative 3 would have a minor to moderate adverse effect on wildlife through habitat disturbance (including tree removal), noise, human presence, and operation of heavy equipment. Implementation of mitigation measures, such as preconstruction wildlife surveys and erosion and sedimentation control measures (see Appendix C, Mitigation Measures Common to All Action Alternatives), would reduce the magnitude of the construction-related adverse effects on wildlife to minor. Minor, adverse, operation-related effects on wildlife would occur through habitat fragmentation, increased human presence, and expansion of development into undeveloped areas. The beneficial effects on wildlife and highly valued resources due to riparian and meadow habitat restoration activities, modification of Northside Drive into a multi-use paved trail, and restoration of the natural hydrology of Yosemite Creek would offset the adverse construction- and operation-related impacts associated with Alternative 3. Overall, Alternative 3 would have a local, long-term, minor, adverse effect on wildlife.

Cumulative Impacts

The cumulative impact analysis for wildlife under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1. Overall, the cumulative projects would have a regional, long-term, moderate, beneficial effect on wildlife. The beneficial effects of the restoration efforts in Yosemite Valley would offset the adverse effects associated with development projects and construction activities.

Alternative 3 and the cumulative projects would result in a local, long-term, moderate, beneficial impact on wildlife because of the overall emphasis on restoring disturbed or developed land to natural conditions and improving the health of ecosystems. These beneficial effects would outweigh the adverse effects associated construction-related activities and new development under Alternative 3 and the cumulative development projects.

Impairment

Alternative 3 would result in a local, long-term, minor, adverse impact to wildlife at the Yosemite Lodge Area Redevelopment site due to habitat fragmentation, noise, human presence, and other use-associated effects. The adverse effect of this alternative on wildlife would be primarily localized and would not be considered severe. The local adverse impact to wildlife would not be of sufficient magnitude or nature to impair the integrity of wildlife resources in the park for future generations.

Special-status Species

As discussed in Chapter III, Affected Environment, Yosemite Lodge as well as large portions of Northside Drive, Camp 4, and the Indian Cultural Center are located within urban habitat. The high level of ongoing human disturbance, such as human presence and high noise levels from cars and buses, greatly reduces the value of urban habitat for special-status species.

Analysis

As described for Alternative 2, special-status species known to occur or with potential to occur in the immediate vicinity of the Yosemite Lodge area, Camp 4, Northside Drive, Indian Cultural Center, Yosemite Creek Bridge, and Yosemite Creek Pedestrian/Bicycle Bridge include bald eagle, Yosemite Mariposa sideband snail, Sierra pygmy grasshopper, Harlequin duck, peregrine falcon, white-headed woodpecker, rufous hummingbird, California spotted owl, golden eagle, Cooper's hawk, sharp-shinned hawk, willow flycatcher, yellow warbler, 10 species of bats, and 8 special-status plant species (refer to Chapter III, Affected Environment, and Appendix D, Special-status Species Evaluation, for additional information). Special-status species habitat, in particular riparian and meadow habitat, is considered sensitive wildlife habitat and a highly valued resource.

Construction-related Effects on Special-status Species of Birds. Like Alternative 2, construction of Alternative 3 would result in local, short-term and long-term but temporary, moderate, adverse effects on special-status bird species. Alternative 3 would include the removal of 1,036 trees. During Phase 1, removal of trees or snags would adversely affect California spotted owl, Cooper's hawk, and sharp-shinned hawk breeding or foraging within the Yosemite Lodge area or the realigned Northside Drive, and bald eagle, golden eagle, peregrine falcon, white-headed woodpecker, and rufous hummingbird foraging habitat.

Similar to Alternative 2, construction crews would range in size from 85 to 95 individuals in Phase 1 to 30 individuals in Phase 3. Construction activities, heavy equipment movement, and general activity and noise adjacent to active bird nests during Phase 1 and Phase 2 could result in the harassment of adults and loss of young. Removal of Yosemite Lodge cabins between the Lodge and the Merced River would provide a beneficial impact to Harlequin duck, willow flycatcher, and yellow warbler.

Phase 3 activities are identical for Alternative 2 and Alternative 3. Human activity and construction noise during removal of the Yosemite Creek diversion dam and restoration and revegetation activities could result in nest abandonment or loss of young and reproductive potential, a slightly detectable adverse effect on yellow warbler and Harlequin duck. Though the Merced River riparian corridor provides low-quality habitat for willow flycatcher, this species has not been observed nesting in the Valley for 30 years and is not likely to be affected by Phase 3 activities.

Similar to Alternative 2, implementation of preconstruction surveys for breeding birds, avoidance of construction activities adjacent to active special-status bird species nests during the breeding season, potential nest monitoring, and other measures during all three phases of construction (see Appendix C, Mitigation Measures Common to All Action Alternatives) would reduce construction-related effects on special-status bird species. With mitigation, construction-related activities would have a local, long-term but temporary, negligible, adverse effect on special-status bird species. Preconstruction surveys would identify breeding birds within or adjacent to

construction work areas, and nest monitoring would ensure that activities with the potential to disturb active nests do not occur adjacent to active special-status bird species nests during the breeding season.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, negligible, adverse impact.

Construction-related Effects on Special-status Species of Bats. Under Alternative 3, Phase 1 and 2 tree removal would have a short-term and long-term, moderate, adverse effect on special-status species of bats roosting in trees or snags within the Yosemite Lodge area, Camp 4, realigned Northside Drive, and the Indian Cultural Center through habitat removal or noise disturbance, as under Alternative 2. Phase 1 building demolition of Yosemite Lodge cabins would adversely affect special-status bats roosting in these structures. Measures described for Alternative 2 (see Appendix C, Mitigation Measures Common to All Action Alternatives) would be implemented to reduce adverse effects on bats during construction of Alternative 3. As described under Alternative 2, disturbance of foraging habitat and activities near active bat roosts during Phase 3 restoration activities would likely have a long-term but temporary, negligible effect on bats.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, negligible, adverse impact.

Construction-related Effects on Yosemite Mariposa Sideband Snail. As with Alternative 2, activities associated with the construction of the Indian Cultural Center in rockslide habitat during Phase 2 would result in short-term, minor, adverse effects on Yosemite Mariposa sideband snail through habitat removal and human trampling. Measures described under Alternative 2 (see Appendix C, Mitigation Measures Common to All Action Alternatives) would reduce the potential adverse effects of construction.

Impact Significance After Mitigation Included in the Project. Local, short-term, negligible to minor, adverse impact.

Construction-related Effects on Sierra Pygmy Grasshopper. As with Alternative 2, activities associated with Phase 3 restoration and revegetation of the Merced River riparian and meadow habitat would result in short-term adverse effects on Sierra pygmy grasshopper through human and vehicle disturbance. Measures described for Alternative 2 would reduce the potential adverse effects of construction.

Impact Significance After Mitigation Included in the Project. Local, short-term, negligible to minor, adverse impact.

Construction-related Effects on Special-status Plants. Similar to Alternative 2, human and vehicle disturbance of upland habitat during Phase 1 and Phase 2 construction in the Yosemite Lodge area, Camp 4, and Indian Cultural Center, and Phase 3 riparian and meadow restoration activities along the Merced River would result in minor adverse impacts to this species. Implementation of measures identified for Alternative 2 would reduce adverse effects on special-status plant species.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, negligible to minor, adverse impact.

Operation-related Effects on Special-status Species of Birds. Similar to Alternative 2, Alternative 3 would not fragment upland habitat for special-status bird species or increase human presence in the Yosemite Lodge Area Redevelopment site substantially more than would occur under Alternative 1. Due to the disturbed nature of the majority of the project site and the existing high degree of human use of the area, operation-related effects on special-status bird species would continue to be moderate and adverse, as described under Alternative 1. In the long term, modification of Northside Drive to a multi-use paved trail would reduce traffic disturbance in upland habitats north of Yosemite Lodge. Restoration and revegetation efforts, including restoration of hydrology in Yosemite Creek and the Merced River floodplain through removal of the diversion dam, would have a beneficial effect on special-status bird species. Similar to Alternative 2, operation of Alternative 3 would result in a local, long-term, negligible, beneficial impact to special-status bird species compared to Alternative 1.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible, beneficial impact.

Operation-related Effects on Special-status Species of Bats. Operation-related effects on special-status species of bats under Alternative 3 would be similar to effects under Alternative 2. Although Alternative 3 would fragment habitat for bats in some locations, remove some structures suitable for roosting, and result in some new development in upland forest habitats, this alternative would have a beneficial effect on bats through restoration of upland, riparian, and wetland habitats that support foraging and breeding and removal of vehicle traffic from upland forest habitats.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, beneficial impact.

Operation-related Effects on Yosemite Mariposa Sideband Snail. As with Alternative 2, the operation of the Indian Cultural Center would displace potential habitat for the Yosemite Mariposa sideband snail and introduce additional human disturbance to this area. This adverse effect would be decreased somewhat by current levels of human disturbance and foot traffic already present at the Indian Cultural Center. As described in Alternative 2, operation of Alternative 3 would result in negligible to minor, adverse effects on this species.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible to minor, adverse impact.

Operation-related Effects on Sierra Pygmy Grasshopper. As under Alternative 2, Alternative 3 restoration activities would have a beneficial effect on the Sierra pygmy grasshopper through restoration of riparian habitat and the creation of suitable habitat for this species along the Merced River and Yosemite Creek.

Impact Significance after Mitigation Included in the Project. Local, long-term, negligible, beneficial impact.

Operation-related Effects on Special-status Plants. Similar to Alternative 2, revegetation of large portions of upland habitat between the Valley Loop Trail and Camp 4, restoration of potentially wet meadows and riparian habitat between Yosemite Lodge and the Merced River, and restoration of the natural hydrology of Yosemite Creek through removal of the Yosemite Creek diversion dam would result in beneficial effects to special-status plant species.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible to minor, beneficial impact.

Summary of Alternative 3 Impacts. Like Alternative 2, Alternative 3 construction-related activities would have a minor to moderate adverse effect on special-status species through habitat disturbance (including tree removal), noise, and operation of heavy equipment. Implementation of mitigation measures, such as preconstruction surveys, nest monitoring, and avoidance of special-status species and occupied habitat wherever feasible (see Appendix C, Mitigation Measures Common to All Action Alternatives), would reduce the magnitude of the construction-related adverse effects on special-status species. The beneficial effects on special-status species and highly valued resources due to riparian and meadow habitat restoration activities, modification of Northside Drive into a multi-use paved trail, and restoration of the natural hydrology of Yosemite Creek would offset the adverse construction- and development-related effects associated with Alternative 3. Restoration and revegetation activities would have beneficial impacts on habitat for special-status species. Overall, Alternative 3 would have a local, long-term, negligible, beneficial effect on special-status species.

Cumulative Impacts

The cumulative impact analysis for special-status species under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Overall, current and reasonably foreseeable future projects considered in conjunction with the actions under Alternative 3 would have a regional, long-term, moderate, beneficial effect on special-status species and their habitats. This is primarily due to the beneficial effects associated with implementation large-scale planning efforts that would protect and restore highly valued resource habitats in Yosemite Valley. These restoration efforts would compliment actions under this alternative, which would restore areas of upland, meadow, and riparian habitats that are important to many special-status species.

Impairment

Alternative 3 would result in a local, long-term, negligible, beneficial impact to special-status species at the Yosemite Lodge Area Redevelopment site. Since Alternative 3 would have an overall beneficial effect, this alternative would not impair special-status species for future generations.

Air Quality

Analysis

Construction Emissions. Under Alternative 3, the adverse construction-related impacts on air quality associated with the three-phase, 13-year construction period would be largely the same as described under Alternative 2. Construction-related emissions sources under Alternative 3 would be generated by operation of heavy-duty equipment, worker commute trips, and truck delivery trips. Emission levels generated by demolition and construction activities under Alternative 3 would be similar to those described for Alternative 2, despite the slightly higher number of truck trips (1,355 truck trips across all three construction phases under Alternative 3), the need for more construction workers (85 to 95 during one year of Phase 1), the removal of slightly more utility lines (3,345 linear feet), removal of slightly fewer trees (1,036 trees), the demolition the same number of lodge units (88), and slightly smaller restoration area (37.31 acres). Although the

phasing of new lodging development under Alternative 3 would be somewhat different, effects to air quality during both intense construction periods and less intense construction periods would be similar to the effects described for Alternative 2. Moreover, Alternative 3 would implement the same mitigation measures identified under Alternative 2, and these measures would reduce the effect of construction-related emissions under Alternative 3 to a negligible to minor intensity, depending on the intensity of construction activities taking place and the proximity to recreational uses and overnight accommodations.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, negligible to minor, adverse impact.

Nonvehicle Operational Emissions. Under Alternative 3, impacts to air quality from nonvehicle operational emissions at Yosemite Lodge (emissions from propane consumption for space and water heating) would be similar to the impacts described under Alternative 2. Increased wood burning at Camp 4, however, would result in a noticeable increase in emissions of wood smoke (and associated air pollutants, such as reactive organic gases) compared to Alternative 1. As part of the expansion of Camp 4 to 65 sites, approximately 27 additional campfire rings would be added, since each camp site would have its own fire ring. Unlike Alternative 2, the design of Camp 4 under Alternative 3 would not include a cooking pavilion with a group fire ring to provide campers an alternative to having their own campfires. Thus, the use of approximately 27 additional fire rings at Camp 4 would result in an adverse effect to local air quality.

Impact Significance. Local, long-term, minor, adverse impact.

Vehicle Operational Emissions. Under Alternative 3, the effects of vehicle emissions associated with the operation of Yosemite Lodge, Camp 4, and the Indian Cultural Center would be similar to the effects described under Alternative 2. Like Alternative 1, the Camp 4 parking lot on the campground site under Alternative 3 would be unpaved. The Camp 4 parking lot on the Lodge site would be paved (approximately 55,900 square feet). Unpaved parking facilities at Camp 4 would be reduced from 111 parking spaces under Alternative 1 to 101 parking spaces under Alternative 3. Moderately lower levels of particulate matter would thus be generated by vehicle activity on the smaller unpaved Camp 4 parking lot as compared to Alternative 1, resulting in a slightly detectable beneficial impact.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, beneficial impact.

Summary of Alternative 3 Impacts. Like Alternative 2, the construction activities associated with Alternative 3 would have a minor to moderate, adverse effect on air quality. As described in Appendix C, Mitigation Measures Common to All Action Alternatives, implementation of practices such as watering, covering stockpiles, and covering haul trucks would reduce the intensity of the adverse construction-related emissions to negligible to minor. Overall, Alternative 3 would have a local, long-term, negligible, beneficial effect on air quality associated with the reduction of vehicle emissions. The beneficial operational effects would offset the adverse effects to air quality associated with demolition and construction activities and increased nonvehicle operational emissions.

Cumulative Impacts

The cumulative impact analysis for air quality under Alternative 3 is the same as described under Alternative 1. See the description of cumulative effects under Alternative 1.

Alternative 3 and the cumulative projects would result in a regional, long-term, minor, beneficial effect on air quality. The beneficial effects of Alternative 3 associated with reduced vehicle emissions would contribute to the overall beneficial effects of the cumulative projects.

Impairment

Implementation of Alternative 3 would result in a local, long-term minor, beneficial impact to air quality. As a result, this alternative would not impair air quality.

Noise

Analysis

Construction Noise. Under Alternative 3, the adverse construction-related noise impacts associated with the three-phase, 13-year construction period would be largely the same as described under Alternative 2. Construction-related noise under Alternative 3 would be generated by operation of heavy-duty equipment, truck delivery trips, and worker commute trips. Noise levels generated by demolition and construction activities under Alternative 3 would be similar to those described for Alternative 2, despite the slightly higher number of truck trips (1,355 truck trips across all three construction phases), the need for more construction workers (85 to 95 during one year of Phase 1), the removal of slightly more utility lines (3,345 linear feet), removal of slightly fewer trees (1,036 trees), demolition of the same number of lodging units (88), and slightly smaller restoration area (37.31 acres). Although the phasing of new lodging development under Alternative 3 would be somewhat different, effects to the ambient noise environment during both intense construction periods and less intense construction periods would be similar to those for Alternative 2. Although Alternative 3 would implement the same equipment noise controls and mitigation measures as identified under Alternative 2, construction noise would have a local, short- and long-term but temporary, major, adverse impact, depending on the intensity of construction activities taking place and the proximity to recreational uses and overnight accommodations. As discussed under Alternative 2, the *Final Yosemite Valley Plan/SEIS* analyzed and disclosed this major impact to the noise environment associated with construction activity.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, major, adverse impact.

Nonvehicle Operational Noise. Like Alternative 2, nonvehicle noise levels generated on and near Yosemite Lodge and Camp 4 under Alternative 3 would be slightly higher than under Alternative 1, because of increased visitor activity associated with the expansion of Camp 4 by approximately 28 campsites and of the Lodge by 6 units. Nonvehicle noise associated with Alternative 3 would result from an increase in activity in the area, particularly at Camp 4. The overall increase in noise levels associated with heightened activity would be imperceptible and is therefore considered a negligible effect.

Under Alternative 3, the amphitheater would not be expanded and would remain in the same location as under Alternative 1. Like Alternative 1, the amphitheater would not be located immediately adjacent to a Lodge unit building, and therefore events held at the amphitheater would not result in noise conflicts with overnight guests.

Impact Significance. Local, long-term, negligible, adverse effect.

Vehicle Operational Noise. The impact of traffic-related noise under Alternative 3 would be the same as described under Alternative 2. See the discussion of vehicle operational noise under Alternative 2.

Impact Significance. Local, long-term, minor, beneficial impact.

Summary of Alternative 3 Impacts. As with Alternative 2, noise generated by demolition and construction activities under Alternative 3 would have a local, long-term but temporary, major, adverse effect on the ambient noise environment during the 13-year construction period. As described in Appendix C, Mitigation Measures Common to All Action Alternatives, measures would be employed to mitigate adverse noise impacts, including implementation of standard noise abatement measures during construction (such as schedules that minimize impacts to adjacent noise-sensitive uses), use of best-available noise control techniques where feasible, use of hydraulically or electrically powered impact tools when feasible, and siting of stationary noise sources as far from noise-sensitive uses as possible. Although the mitigation measures would somewhat reduce construction noise levels, during intense periods of construction the noise levels would continue to be substantial and highly noticeable. Overall, Alternative 3 would have a local, long-term, moderate, adverse effect on the noise environment. The adverse effects associated with construction noise and increases in nonvehicle operational noise would be somewhat offset by the beneficial effects associated with reduced vehicle noise.

Cumulative Impacts

The cumulative impact analysis for noise under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative impacts under Alternative 1.

Alternative 3 construction-related noise at the project site would contribute to the adverse construction-related noise impacts of the cumulative projects. Overall, however, Alternative 3 and the cumulative projects would have a regional, long-term, minor, beneficial impact. The permanent beneficial effect of the reduction in regional vehicle noise would offset the temporary construction-related noise impacts and the small increase in nonvehicle noise associated with Alternative 3.

Impairment

Impairment is not addressed in the noise analysis, because this resource topic is peripheral to the protection of the park for future generations.

Cultural Resources

Archeological Resources

Analysis

Construction-related Effects on Archeological Resources. Similar to Alternative 2, construction-related activities associated with Alternative 3 would involve major grading, trenching, and other earthmoving activities that would likely disturb intact deposits at all or portions of five archeological sites. The construction-related impacts would be the same as described under Alternative 2, with the exception of CA-MRP-59/H. Under Alternative 3, no new buildings would be constructed in the southern area of this site. Utility trenching would also be reduced. Disturbance of an individual archeological resource is considered a long-term, minor to moderate, adverse impact, depending on the data potential of the resource.

As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, measures to mitigate construction-related impacts would be implemented as part of this alternative. Mitigation measures would include avoidance, construction monitoring, documentation, interpretation, data recovery, and National Register re-evaluation. According to Stipulation VII (A), Resolution of Adverse Effects of the Programmatic Agreement, impacts to archeological resources are not considered adverse for purposes of Section 106 of the National Historic Preservation Act if data recovery is carried out in accordance with the 1999 Programmatic Agreement. Application of mitigation would reduce the intensity of adverse impacts to minor.

Impact Significance After Mitigation Included in the Project. Local, permanent, minor, adverse impact.

Operation-related Effects on Archeological Resources. As with Alternative 2, five documented archeological sites lie within the Yosemite Lodge Area Redevelopment, all of which are contributing elements of the Yosemite Valley Archeological District. Degradation of archeological resources associated with visitor use and park maintenance would continue, including minor adverse impacts due to casual removal of surface artifacts and subsurface disturbance during routine maintenance of underground components (e.g., utility lines). Any site-specific planning would be performed in accordance with stipulations in the park's 1999 Programmatic Agreement regarding the planning, construction, operations, and maintenance activities at Yosemite National Park.

Impact Significance. Local, permanent, minor, adverse impact.

Summary of Alternative 3 Impacts. Construction-related activities under Alternative 3 would have a minor adverse effect on five archeological resources within the construction and demolition footprint. As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, mitigation measures would be implemented, including avoidance, construction monitoring, documentation, interpretation, data recovery, and National Register re-evaluation. With mitigation, Alternative 3 would have a local, permanent, minor, adverse effect on archeological resources associated with construction-related activity and operational disturbances. Any site-specific planning would be performed in accordance with stipulations in the park's 1999 Programmatic Agreement.

Cumulative Impacts

The cumulative impact analysis for archeological resources under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 3 and the cumulative projects in Yosemite Valley would result in a regional, permanent, minor, adverse impact on archeological resources. Alternative 3 would contribute to the loss of regional archeological resources as a consequence of the disturbance or degradation of five archeological sites. To mitigate adverse impacts, important information contained in these sites would be recovered according to stipulations of the Programmatic Agreement.

Impairment

Alternative 3 would have a local, permanent, minor, adverse effect on archeological resources due to the potential to affect previously identified archeological deposits. With implementation of mitigation measures, the effect of this alternative would be localized and would not be considered severe. Therefore, Alternative 3 would not impair archeological resources for future generations.

American Indian Traditional Resources

Analysis

Construction-related Effects on Traditional Resources. As described under Alternative 2, five American Indian traditional resources are located within the project area. Demolition and construction associated with Alternative 3 has the potential to directly affect traditional resources, including the historic villages of *Koom-i-ne* (CA-MR-59/H and CA-MRP-240/303/H) and *Wah-ho-gah* (CA-MRP-305/H), bracken fern and *helli* (mushroom) collection areas, and stands of California black oaks in the project area. Alteration of the current setting could affect these traditional cultural properties and ethnobotanical resources, resulting in a local, long-term, minor to moderate, adverse impact to American Indian traditional resources.

Every effort would be made to avoid adverse impacts. If such avoidance were not feasible or prudent, the park, in consultation with culturally associated Indian tribes, would mitigate the impacts to the greatest extent possible, potentially reducing the intensity of the impacts. For the two historic villages, mitigation measures could include avoidance, construction monitoring, documentation, interpretation, materials salvage, data recovery, and National Register re-evaluation.

For the ethnobotanical resources, mitigation would be included as part of project design, such as confining construction activities to the development footprint, revegetation with traditionally used plants, monitoring of plant growth, and watering active construction areas to reduce dust (see Appendix C, Mitigation Measures Common to All Action Alternatives). Incorporation of mitigation measures would reduce the intensity of adverse impacts to minor.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, adverse impact.

Operation-related Effects on Traditional Resources. Alternative 3 would not change the treatment and management of American Indian traditional resources. As with Alternative 2, development of an Indian Cultural Center would have a beneficial effect on traditional resources, because the center would provide historical continuity for the descendants of the original native inhabitants of Yosemite, resulting in a long-term beneficial impact on American Indian traditional resources.

Impact Significance. Local, long-term, minor, beneficial impact.

Summary of Alternative 3 Impacts. Similar to Alternative 2, Alternative 3 construction-related activities would have a minor to moderate adverse effect on traditional resources. As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, mitigation measures would include avoidance, construction monitoring, documentation, interpretation, materials salvage, confining construction activities to the development footprint, revegetation with traditionally used plants, monitoring of plant growth, and watering active construction areas to reduce dust. With mitigation to offset adverse construction impacts, Alternative 3 would have an overall local, long-term, minor, beneficial impact on traditional resources due to the development of an Indian Cultural Center. The beneficial historic impacts associated with the Indian Cultural Center would largely offset the adverse construction-related impacts of Alternative 3.

Cumulative Impacts

The cumulative impact analysis for American Indian traditional resources under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 3 and the cumulative projects would have a regional, long-term, minor, adverse impact on American Indian traditional resources associated with potential disturbance of traditional gathering areas or historic village areas and adverse construction-related effects on traditional resources. The beneficial effects of developing the Indian Cultural Center would not offset the adverse effects of the cumulative projects.

Impairment

Alternative 3 would have a local, long-term, minor, adverse and beneficial effects on American Indian traditional resources. Therefore, Alternative 3 would not impair traditional resources for future generations.

Cultural Landscape Resources, including Historic Sites and Structures

Analysis

Operation-related Effects on Cultural Landscape Resources. Like Alternative 2, Alternative 3 would change the character of the Yosemite Falls Trail and the Valley Loop Trail in the project area resulting in a minor, adverse effect. The alignment of the Yosemite Valley Loop Trail would differ slightly from that under Alternative 2. Camp 4, listed on the National Register of Historic Places, would be modified. As described in Alternative 2, the design of Camp 4 would retain elements consistent with the current Camp 4. Alteration of Camp 4 would result in no adverse impact to the property.

As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, Alternative 3 would incorporate mitigation measures, including data recovery and documentation. Overall, Alternative 3 would have a local, long-term, minor, adverse impact on cultural landscape resources.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, adverse impact.

Summary of Alternative 3 Impacts. Like Alternative 2, Alternative 3 would alter two trails and Camp 4, resulting in a minor adverse impact on cultural landscape resources. As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, mitigation measures would include data recovery and documentation. Overall, Alternative 3 would have a local, long-term, minor, adverse impact on cultural landscape resources.

Cumulative Impacts

The cumulative impact analysis for cultural landscape resources under Alternative 3 is the same as described under Alternative 1. Please see the discussion of cumulative effects under Alternative 1.

Alternative 3 and the cumulative projects would have a regional, long-term, minor to major, adverse impact on the cultural landscape. Alterations to the cultural landscape at the Yosemite Lodge Area Redevelopment site would contribute to the adverse effects of the cumulative projects.

Impairment

Alternative 3 would result in a local, long-term, minor, adverse impact to cultural landscape resources. The effect of this alternative would be localized and would not be considered severe. The extent and quality of cultural landscape resources throughout the park would remain unaffected under Alternative 3. Therefore, Alternative 3 would not impair cultural landscape resources for future generations.

Section 106 Summary for Alternative 3

For the purpose of assessing effects to historic properties under the National Historic Preservation Act and implementing regulations (36 Code of Federal Regulations 800), the effects are considered either adverse or not adverse, or there is no effect. Archeological sites would be managed in accordance with the 1999 Programmatic Agreement. For CA-MRP-59/H, monitoring during construction and data recovery in the site area north of existing Northside Drive would be undertaken. CA-MRP-63 could be avoided through project design. If the site could not be avoided, then monitoring during construction and data recovery are appropriate treatments. For the remaining three archeological sites, CA-MRP-240/303/H, CA-MRP-305/H, and CA-MRP-748/765/H, preparation of an Inadvertent Discovery Plan, data recovery, and monitoring during construction would be completed. American Indian traditional resources would be managed in accordance with the 1999 Programmatic Agreement, thereby resolving adverse impacts. The park has developed mitigation measures through consultation with culturally associated American Indians groups to address adverse effects on American Indian traditional resources. Cultural landscape resources would be avoided, documented, or subject to data recovery. Construction of project components would not take place until the appropriate mitigation treatment had been determined in consultation with the California State Historic Preservation Officer and, if appropriate, the American Indian Council of Mariposa County. Construction of the various project components has the potential to adversely affect historic properties or properties recommended as a contributing element of the Yosemite Valley Traditional Cultural Property District. Under regulations of the Advisory Council on Historic Preservation (36 Code of Federal Regulations 800.5) addressing the criteria of effect and adverse effect, the National Park Service finds that construction of the facilities associated with Alternative 3 would have the potential to adversely affect historic properties. While every effort is made to avoid or minimize impacts to cultural resources as a result of project design, some impacts are unavoidable. In accordance with National Park Service policies and procedures, the park would continue to protect cultural

resources to the greatest extent possible. Disturbance of significant cultural resources would be avoided wherever possible, but in instances where avoidance or preservation could not be achieved, appropriate mitigation would be carried out under provisions of the 1999 Programmatic Agreement.

Social Resources

Scenic Resources

Analysis

Construction-related Effects on Scenic Resources. Under Alternative 3, the adverse construction-related impacts on scenic resources associated with the three-phase, 13-year construction period would be largely the same as described under Alternative 2. Adverse construction-related impacts would be associated with clearly visible demolition and construction activities that would detract from the visual setting of the Yosemite Lodge Area Redevelopment site. Like Alternative 2, during the multiple-year periods of construction inactivity in the phasing effort, the project site would be fully functioning, with no visible signs of previous or upcoming construction activity under Alternative 3.

Under Alternative 3, during intense construction periods at Yosemite Lodge and Camp 4, there would be a local, short- and long-term but temporary, moderate, adverse impact to scenic resources, as described under Alternative 2. These adverse impacts would be associated with readily apparent demolition and construction activities and construction staging areas. Under Alternative 3, the development of new lodging units would be phased differently than in Alternative 2, and construction activities would include the removal of 1,036 trees. As with Alternative 2, the presence of 30 to 95 construction workers, over 1,200 concrete and tractor-trailer truck trips, and operation of heavy equipment would detract from short- and long-range views of the site as well as views of scenic resources (e.g., Yosemite Falls, Sentinel Rock, Half Dome) from the project site. Although there would be minor differences in the construction phasing, the overall magnitude and nature of adverse impacts associated with construction of Yosemite Lodge and Camp 4 would be similar to those described for Alternative 2.

The adverse scenic impacts associated with the less intensive construction efforts (i.e., construction of the Indian Cultural Center, revegetation, and restoration activities) would be similar to those described under Alternative 2, although 37.31 acres of the project area would be restored under Alternative 3. Aside from the nominal difference in area to be restored, the impacts in Alternative 3 would be the same as described under Alternative 2, constituting a local, short- and long-term but temporary, minor, adverse impact to scenic resources.

Alternative 3 would implement the same mitigation measures identified under Alternative 2; these measures would somewhat lessen the adverse construction-related impacts to scenic resources, but would not change the magnitude of the adverse effects.

Impact Significance After Mitigation Included in the Project. Local, short- and long-term, moderate, adverse impact.

Operation-related Effects on Scenic Resources. Like Alternative 2, Alternative 3 would have a local, long-term, moderate, beneficial effect on views of the project area due to the design improvements to the site. Alternative 3 would provide similar improvements in building

architectural styles, consistent with Yosemite Lodge and Yosemite Valley architectural guidelines, and design improvements in building siting to take advantage of views of Valley scenic features. In addition, some existing structures that detract from the consistent architectural style of the site would be removed, such as the maintenance buildings, temporary employee housing structures, Wellness Center, and electrical substation. Alternative 3 would mix different guest lodging types (i.e., one-story and two-story units), creating a more uniform building configuration throughout the Lodge site.

As described under Alternative 2, the layout of the project site under Alternative 3 would have a pedestrian focus. Alternative 3 would increase the length of trails by 2,350 linear feet, providing new opportunities for pedestrian views of prominent visual features, such as along the promenade, at the larger-scale viewing plaza, and on the new multi-use paved trail. Parking and roads would have a much reduced visual presence on the Yosemite Lodge site. The main Lodge parking lot would be located remotely at the western end of the Lodge site, with a smaller parking lot in the center of the site. Parking would no longer line the Lodge entry roadway; bus parking would be moved to the western end of the site; the Northside Drive realignment would remove a visual barrier between Yosemite Lodge and Lower Yosemite Fall and Camp 4; and the proposed roundabout would provide views toward Yosemite Falls for visitors in vehicles. The pedestrian-focused layout of the site would have a local, long-term, moderate, beneficial impact on scenic resources.

Similar to the beneficial impacts described under Alternative 2, the proposed revegetation and restoration activities under Alternative 3 would improve the condition of natural resources at the project site and enhance the visitor's connection with the out-of-doors. Revegetation activities would re-establish native plant communities and would be used to screen built features from prominent views. Site landscaping at the Indian Cultural Center would include cultural landscape plants. Camp 4 would be redesigned to conform to the existing landscape, and revegetated to improve ground cover and opportunities for tree cover at the campground. Proposed restoration of 37.31 acres of the project area would improve the condition of natural resources at the project site and improve views of the restoration areas. Tree management activities would remove 1,036 trees from the project site, including 100 trees for view corridor management and 294 trees for forest management. As with Alternative 2, this would create a more open landscape, similar to Valley conditions before Euro-American settlement. Proposed revegetation and restoration activities, particularly viewshed and forest management efforts, would have a local, long-term, moderate, beneficial impact on scenic resources.

The increase in developed features at the project site would have a local, long-term, moderate, adverse effect on views of and from the area. There would be an increase in the number of lodging units (from 245 to 251 lodging units), and the number of lodging buildings (from 15 to 25 buildings), although the new buildings would predominantly be smaller-scale four-plex cabin units. New built facilities would be developed at Camp 4, including two new restroom and shower buildings and an expanded kiosk. Also at Camp 4, campsites would be expanded into an undeveloped area. Similarly, the Indian Cultural Center would be constructed at a former village site and would include proposed development similar to the development described in Alternative 2. New propane tank farms would be developed on the Lodge site and the Indian Cultural Center site, adding new industrial visual elements to the project area. The proposed tree management activities would remove trees that serve as visual screening for development at the Lodge and Camp 4, which would increase views of developed features at the site. In addition, the

191,800-square-foot increase in impervious surface area on the project site would contribute to a more built appearance of the site.

New parking areas would be constructed on the project site, and the number of Lodge and Camp 4 parking spaces would increase from 575 parking spaces to 596 parking spaces. Most Lodge guest parking would be remotely located at the western end of the site. The large polygon shapes of the Lodge parking lots would be more visible from vantage points above the site than the rectilinear parking configuration under Alternative 1. Parking lots would be paved in a black surface to minimize views from the Valley rim, with the exception of the Camp 4 parking lot on the Camp 4 site, which would remain unpaved. The packed earth parking lot at Camp 4 would be natural-appearing, similar to the parking lot surface under Alternative 1. Under Alternative 3, parking areas would be more prominent in views of the Lodge site from Camp 4.

As identified in Appendix C, Mitigation Measures Common to All Action Alternatives, Alternative 3 would implement a measure to mitigate adverse development-related scenic resource impacts. The mitigation measure would include providing vegetative screening to block views of developed features using native plant species. The mitigation measure would lessen the adverse development-related impacts to scenic resources, but would not change the magnitude of the adverse impact.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, beneficial impact.

Summary of Alternative 3 Impacts. Alternative 3 would have a local, long-term, minor, beneficial impact on scenic resources compared to Alternative 1. The beneficial effects associated with the proposed facility design improvements, pedestrian-focused site layout, revegetation and restoration activities, and viewshed and forest management efforts would outweigh the adverse effects to scenic resources associated with construction activities and increased developed features at the project site.

Cumulative Impacts

The cumulative impact analysis for scenic resources under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

The cumulative projects in Yosemite Valley would result in a regional, long-term, moderate, beneficial impact on scenic resources because of the overall emphasis on restoring disturbed or developed land to natural conditions and improving the health of ecosystems. Alternative 3 would contribute the beneficial effects of the cumulative projects. Alternative 3 and the cumulative projects would result in a regional, long-term, moderate, beneficial impact on scenic resources.

Impairment

Alternative 3 would result in a local, long-term, minor, beneficial impact on scenic resources compared to Alternative 1. Since Alternative 3 would have an overall beneficial effect, this alternative would not impair scenic resources for future generations.

Visitor Experience

Analysis

Construction-related Recreation Effects. Alternative 3 would result in adverse construction-related impacts associated with temporary interference with access to recreational opportunities in the project area. The intensity and nature of construction activities would vary over the 13-year construction period, and the adverse impacts on recreation activities would similarly vary. Project construction would require a typical peak workforce of 85 to 95 individuals for one year and 1,070 truck trips under Phase 1, a typical peak workforce of 75 to 85 individuals for one year and 265 truck trips under Phase 2, and a typical peak workforce of approximately 30 individuals working seasonally and 20 truck trips under Phase 3.

While the number and arrangement of facilities under Alternative 3 would differ from those under Alternative 2, construction activities would also occur in three phases over a 13-year period, from spring 2004 through fall 2016. The effects of construction activities would be similar to those identified for Alternative 2. See the discussion of construction-related recreation effects under Alternative 2.

Traffic control measures, air quality and noise measures, and a visitor outreach communication plan, as described in Appendix C, Mitigation Measures Common to All Action Alternatives, would be implemented to reduce effects related to recreation access. Construction-phase activities under Alternative 3 would result in a local, long-term but temporary, minor, adverse impact on recreation activities in the project area compared to Alternative 1.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor, adverse impact.

Operation-related Recreation Effects. Under Alternative 3, recreation opportunities would be increased and the experience altered from that described for Alternative 1. Camp 4 would be continue to be managed as a first-come, first-served campground; however, the number of campsites would be increased from 37 to 65, with one fire ring at every campsite, and the number of parking spaces would be increased from 111 to 195 spaces, with a portion of the parking area unpaved. New and redesigned campsites would be compatible with the site character, and important historic features related to the campground's use as an unofficial climbers' camp would be retained.

Redevelopment of Yosemite Lodge would improve sightseeing opportunities compared to Alternative 1 by creating a lodging experience more connected with and unique to Yosemite National Park; providing a pedestrian-focused site design, including a promenade, two small viewing plazas, and removal or renovation of facilities that currently dominate important views; and realigning existing Northside Drive. Restoration of approximately 37.31 acres, revegetation of existing and historic vegetation communities in the project area, and removal of up to 100 trees to restore key views and view corridors would enhance sightseeing opportunities in the project area.

Under Alternative 3, redevelopment of the Yosemite Lodge with a pedestrian-focused site design, including a promenade and roundabout, would encourage walking, hiking, and bicycling in the project area and would reduce the traffic hazard to pedestrians and bicyclists that occurs under Alternative 1 by locating pedestrian crossings in areas with the greatest sight distance. The

promenade would serve as the central pedestrian corridor, and connections between the main pedestrian entrance and the Lower Yosemite Fall area would be established. Under Alternative 3, existing Northside Drive between the roundabout and the western connection of realigned Northside Drive and existing Northside Drive would be converted to a multi-use paved trail, increasing opportunities for trail use in the project area. In addition, the existing multi-use paved trail south of the Lodge site would be improved and connected to Swinging Bridge. The Valley Loop Trail and stock trail would be located to the west side of the existing intermittent drainage near Camp 4. Implementation of Alternative 3 would result in an increase of 2,350 linear feet of trails, including an overall increase of 8,350 linear feet of multi-use paved trails, an increase of 50 linear feet of hiker/stock trails, and a decrease of 6,050 linear feet of pedestrian trails compared to Alternative 1. Alternative 3 would install a new bicycle rental stand near the Lodge shuttle bus stop, and bicycle racks would be dispersed throughout the Lodge site and Camp 4 to encourage bicycle use in the project area.

Climbing opportunities in the project area would not be affected, although (as noted above) the number of campsites and parking spaces available at Camp 4 in the vicinity of popular climbing routes would be increased. Conversion of Northside Drive to a multi-use paved trail in the vicinity of Camp 4 and redevelopment of project area trails and paths would enhance opportunities for climbing observation.

Picnicking in the project area would not be noticeably affected by implementation of Alternative 3; however, picnic areas could be relocated and/or improved. Swimming, wading, and fishing in the Merced River, winter activities, and tours would not be affected by implementation of Alternative 3.

Overall, Alternative 3 would result in a local, long-term, minor to moderate, beneficial impact compared to Alternative 1, due to the provision of additional recreation opportunities and the improvement of existing recreation opportunities.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor to moderate, beneficial impact.

Construction-related Orientation and Interpretation Effects. While the number and arrangement of facilities under Alternative 3 would differ from those under Alternative 2, construction activities would also occur in three phases over a 13-year period, from spring 2004 through fall 2016. The effects of construction activities would be similar to those identified under Alternative 2. However, under Alternative 3, the amphitheater would be closed for approximately six months during renovation. See the discussion of construction-related orientation and interpretation effects under Alternative 2.

A visitor outreach communication plan, temporary relocation of orientation and interpretation services, and construction phasing, as described in Chapter II, Alternatives, and Appendix C, Mitigation Measures Common to All Action Alternatives, would be implemented to reduce effects related to disruption of orientation and interpretation opportunities. Facility construction under Alternative 3 would result in a local, long-term but temporary, minor, adverse impact to orientation and interpretation compared to Alternative 1.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor, adverse impact.

Operation-related Orientation and Interpretation Effects. While the number and arrangement of facilities under Alternative 3 would differ from those under Alternative 2, the long-term orientation and interpretation effect would be similar to that identified for Alternative 2. However, under Alternative 3, the existing amphitheater would be improved (accommodating 150 to 200 individuals) and interior interpretive display space would be provided at the Lodge for rotating exhibits, such as presentations on the climbing history of Yosemite National Park, Yosemite Indian cultural history, or U.S. Army park administration history. Camp 4 would not include a climbing display building under Alternative 3. See the discussion of operation-related orientation and interpretation effects under Alternative 2. Overall, Alternative 3 would result in a local and regional, long-term, moderate to major, beneficial impact compared to Alternative 1, due to the increase in orientation and interpretation opportunities, particularly at the Indian Cultural Center.

Impact Significance After Mitigation Included in the Project. Local and regional, long-term, moderate to major, beneficial impact.

Construction-related Visitor Services Effects. While the number and arrangement of facilities under Alternative 3 would differ from those under Alternative 2, construction activities would result in similar construction-related visitor services impacts. See the discussion of construction-related visitor services effects under Alternative 2. Traffic control measures, a visitor outreach communication plan, and construction phasing, as described in Chapter II, Alternatives, and Appendix C, Mitigation Measures Common to All Action Alternatives, would be implemented to reduce effects related to visitor services. Facility construction under Alternative 3 would result in a local, long-term but temporary, minor to moderate, adverse impact to visitor services compared to Alternative 1.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor to moderate, adverse impact.

Operation-related Visitor Services Effects. Compared to Alternative 1, Alternative 3 would result in improved visitor service facilities. The Lodge would be redeveloped to provide an experience that is more unique to a national park lodge and Yosemite National Park. The new registration building would be oriented to enhance guest's arrival experience, and vehicle, bus, and pedestrian approaches would be redesigned to improve traffic flow and pedestrian safety compared to Alternative 1. The overall number of lodging units would be increased to 251 units compared to 245 units under Alternative 1. The character of units would be improved to include more aesthetic appeal and similar architectural style, and buildings would be located outside the 100-year floodplain. Lodging units would be sited to provide a uniform character, with new one-story cabin units and two-story cottage units interspersed throughout the Lodge site. The number of parking spaces would be reduced, and the Lodge would be redeveloped to be more pedestrian-friendly, with the majority of Lodge guest parking located on the western end of the site. The typical distance from parking to lodging units would be 240 to 2,070 linear feet, with an extreme distance of 2,530 linear feet. An appropriate number of disabled-access parking spaces would be provided. The Yosemite Lodge common facilities would remain, but would be renovated and improved to better use indoor space.

Under Alternative 3, the number of campsites at Camp 4 would be increased to a total of 65 campsites, with one fire ring every campsite. New campsites and retained existing campsites east of the intermittent creek at Camp 4 would be designed to conform to the existing landscape, compatible with site character and natural features. Approximately 5% of the campsites would be disabled-accessible. The new Camp 4 registration kiosk and restroom facilities would be redesigned and increased in size to more adequately serve park visitors compared to Alternative 1, including a restroom facility in western Camp 4, restroom and shower facilities near the parking lot and in eastern Camp 4, and shared toilet facilities at the centralized facility for day visitors. Parking at Camp 4 would be increased from 111 unpaved parking spaces to 195 spaces at an unpaved parking lot at Camp 4 and a paved parking lot on the Lodge site, with an appropriate number of spaces for disabled visitors.

Similar to Alternative 2, Alternative 3 would establish the Indian Cultural Center.

Under Alternative 3, the realigned Northside Drive and the roundabout would improve the level of service on Northside Drive. Park visitors traveling through the project area to the Lodge, Camp 4, or other park attractions would experience fewer delays than under Alternative 1.

Overall, Alternative 3 would result in a local and regional, long-term, moderate to major, beneficial impact compared to Alternative 1, due to improvements to visitor services in the project area and provision of the new Indian Cultural Center.

Impact Significance After Mitigation Included in the Project. Local and regional, long-term, moderate to major, beneficial impact.

Construction-related Night Sky Effects. While the number and arrangement of facilities under Alternative 3 would differ from those under Alternative 2, construction activities would also occur in three phases over a 13-year period, from spring 2004 through fall 2016, including some nighttime utility work. The effects of construction activities would be similar to those identified for Alternative 2. See the discussion of construction-related night sky effects under Alternative 2. Mitigation measures described in Appendix C, Mitigation Measures Common to All Action Alternatives (such as directing and shielding night lighting equipment), would be employed to reduce effects on the night sky. Construction activities under Alternative 3 would result in a local, long-term but temporary, minor, adverse impact compared to Alternative 1.

Impact Significance After Mitigation Included in the Project. Local, long-term but temporary, minor, adverse impact.

Operation-related Night Sky Effects. While the number and arrangement of facilities under Alternative 3 would differ from those under Alternative 2, project implementation would require similar exterior lighting. See the discussion of operation-related night sky effects under Alternative 2. Application lighting guidelines and prescriptions (see Chapter II, Alternatives, and Appendix C, Mitigation Measures Common to All Action Alternatives) would minimize the effect of nighttime lighting. Alternative 3 would result in a local, long-term, negligible, adverse impact compared to Alternative 1, due to the overall increase in required exterior lighting.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible, adverse impact.

Summary of Alternative 3 Impacts. Under Alternative 3, construction activities would disrupt use of and access to recreation opportunities in the project area and adjacent areas. Traffic control measures, air quality and noise measures, and implementation of a visitor outreach communication plan, as described in Appendix C, Mitigation Measures Common to All Action Alternatives, would be employed to reduce effects related to recreation access. Construction-phase activities under Alternative 3 would result in a local, long-term but temporary, minor, adverse impact in the project area compared to Alternative 1. Overall, Alternative 3 would result in a local, long-term, minor to moderate, beneficial impact compared to Alternative 1, due to the provision of additional recreation opportunities and improvement of existing recreation opportunities.

Construction activities under Alternative 3 would disrupt orientation and interpretation opportunities in the project area. A visitor outreach communication plan and construction phasing, as described in Chapter II, Alternatives, and Appendix C, Mitigation Measures Common to All Action Alternatives, would be implemented to reduce effects related to disruption of orientation and interpretation opportunities. Facility construction under Alternative 3 would result in a local, long-term but temporary, minor, adverse impact to orientation and interpretation compared to Alternative 1. Overall, Alternative 3 would result in a local and regional, long-term, moderate to major, beneficial impact compared to Alternative 1, due to the increase in orientation and interpretation opportunities, particularly at the Indian Cultural Center.

Under Alternative 3, construction activities would disrupt use of existing visitor-service facilities. Traffic control measures, a visitor outreach communication plan, and construction phasing, as described in Appendix C, Mitigation Measures Common to All Action Alternatives, would be implemented to reduce effects related to visitor services. Facility construction under Alternative 3 would result in a local, long-term but temporary, minor to moderate, adverse impact to visitor services compared to Alternative 1. Overall, Alternative 3 would result in a local and regional, long-term, moderate to major, beneficial impact compared to Alternative 1, due to improvements to visitor services in the project area and provision of the new Indian Cultural Center.

Construction activities under Alternative 3, with mitigation described in Appendix C, Mitigation Measures Common to All Action Alternatives, would result in a local, long-term but temporary, minor, adverse impact to the night sky associated with nighttime utility work. While operation under Alternative 3 would require increased exterior lighting, the design of such lighting (as described in Chapter II, Alternatives) and the application of mitigation measures (as described in Appendix C, Mitigation Measures Common to All Action Alternatives) would result in a local, long-term, negligible, adverse impact to the night sky compared to Alternative 1.

Cumulative Impacts

The cumulative impact analysis for visitor experience under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

The cumulative projects would have a local, long-term, minor, beneficial effect on visitor experience due to expanded opportunities in the park and improved transit service to more park destinations. Alternative 3 and the cumulative projects would result in a local, long-term, minor, beneficial impact on visitor experience due to expanded opportunities in the park and improved transit service to more park destinations. The beneficial effects of Alternative 3 on visitor experience would contribute to the cumulative beneficial effect.

Impairment

Alternative 3 would result in a local, long-term but temporary, minor to moderate, adverse impact and a local and regional, long-term, minor to major, beneficial effect on visitor experience in the project area. In addition, Alternative 3 would result in a local, long-term, negligible, adverse impact to the night sky compared to Alternative 1. Although the project area provides important opportunities for enjoyment of the park, the adverse effect of this alternative on visitor experience would be localized to the Yosemite Lodge and Camp 4 areas, and an overall beneficial long-term effect would occur. Thus, the adverse impact would not be considered severe. Further, the new Indian Cultural Center under Alternative 3 would result in a regional beneficial impact to orientation, interpretation, and visitor services, improving the diversity and quality of visitor experience opportunities throughout the remainder of the park. Therefore, Alternative 3 would not impair visitor experience opportunities for future generations.

Socioeconomics

Analysis

Construction-related Effects on the Socioeconomic Environment. Construction phasing under Alternative 3 would be similar to that under Alternative 2. However, the amount of construction activity and spending would be different under this alternative.

Phase 1 would cost approximately $22 million and take approximately 26 months to complete, during which time construction-related employment would vary from 35 to 45 individuals up to a maximum of 85 to 95 individuals during periods of intensive construction. Total employment is estimated to be 77 full-time equivalents, corresponding to 51 new jobs for the region and $14.5 million during the most intense year of construction under Phase 1.

Phase 2 is expected to cost $26.4 million and would occur over a 10-year period. During the construction period, construction-related employment would vary from 30 to 40 individuals up to a maximum of 75 to 85 individuals during periods of intensive construction. However, there are expected to be many years of construction inactivity during this 10-year phase. Total employment during Phase 2 is estimated to be 41 full-time equivalents, corresponding to 10 new jobs and $6.6 million to the region annually during periods of construction activity.

The short seasonal work efforts for the Phase 3 revegetation and restoration activity may coincide with some Phase 2 construction activity. The total employment during Phase 3 is estimated to be 3 full-time equivalents. Averaged over the two years when construction activity is occurring, this corresponds to 1.5 new jobs to the region and $2.1 million annually during periods of construction activity.

During the most intense construction periods at Yosemite Lodge and Camp 4, there would be up to 95 construction workers employed by the project. However, this employment would be temporary. The maximum annual employment during any year of construction activity is estimated to be 51 full-time equivalents for the region and $14.5 million in construction spending.

Compared to the region's total construction sector employment of 3,070, the additional employment during the major year of construction in Phase 1 would result in a 1.7% increase in employment. In addition to this direct employment impact, it is estimated that each $1 million of construction spending could generate up to 6.2 indirect jobs in other sectors of the region's economy, based on the IMPLAN multipliers (NPS 2000a). Thus, an additional 90 indirect jobs

would be generated during peak project employment, resulting in a negligible beneficial impact on the regional economy. The direct and indirect construction-related effects on the region's employment would represent a long-term but temporary, minor, beneficial impact to the regional socioeconomic environment.

During the most intense construction period, annual construction spending would be approximately $14.5 million. Compared to the region's total annual construction sector output of approximately $580 million, project-related construction spending would represent a 2.5% increase in spending, resulting in a long-term but temporary, minor, beneficial impact to the regional socioeconomic environment.

During the less intensive construction efforts, the project would employ between 25 to 35 part-time construction workers during the year, resulting in a long-term but temporary, negligible, beneficial impact to the regional socioeconomic environment.

Impact Significance. Regional, long-term but temporary, negligible to minor, beneficial impact.

Operation-related Effects on the Regional Economy. Impacts related to the socioeconomic environment under Alternative 3 are essentially the same as described under Alternative 2, except that Alternative 3 incorporates minor differences in the lodging facility layout and Camp 4 facilities. The proposed layout of lodging and parking facilities at Yosemite Lodge under Alternative 3 is not expected to have any appreciable effect on the future lodging occupancy rates. Similarly, the slightly different configuration of campground facilities at Camp 4 is not expected to affect the future overnight visitation at Camp 4.

Impact Significance. Regional, long-term, negligible, beneficial impact.

Operation-related Effects on Employee Housing. Impacts related to employee housing under Alternative 3 are projected to be the same as those identified under Alternative 2.

Impact Significance. Local, long-term, negligible to minor, beneficial impact.

Summary of Alternative 3 Impacts. The combined effect of construction spending, visitor spending, and changes in employee housing is expected to result in a long-term, negligible to minor, beneficial impact to the socioeconomic environment. Impacts associated with construction and visitor spending would be beneficial to the regional socioeconomic environment, and impacts associated with employee housing would be beneficial to the local socioeconomic environment.

Cumulative Impacts

The cumulative impact analysis for socioeconomics under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 3 and the cumulative projects would result in regional, long-term, minor to moderate, beneficial impacts on the socioeconomic environment as a result of the additive effects of expected employment and spending increases associated with Alternative 3.

Impairment

Impairment is no addressed in the socioeconomic analysis, because this resource topic is peripheral to the protection of the park for future generations.

Transportation

Analysis

Construction-related Transportation Effects. Under Alternative 3, the adverse construction-related impacts on transportation conditions associated with the 3-phase, 13-year construction period would be largely the same as described under Alternative 2. Hours of construction, control of deliveries, and locations of staging areas and construction worker parking would be the same as identified under Alternative 2. However, the number of construction workers and construction truck trips would be slightly different under Alternative 3. Also, as with Alternative 2, the Yosemite Lodge Area Redevelopment site would be fully functioning during the multiple-year periods of construction inactivity, with no visible signs of previous or upcoming construction activity under Alternative 3.

As described under Alternative 2, there would be local, short- and long-term but temporary, moderate, adverse impacts to transportation conditions during intense construction periods at Yosemite Lodge and Camp 4 under Alternative 3. These adverse impacts would be primarily associated with temporary increases in traffic volumes on area roadways and in the number of turning movements between roadways and staging areas in proximity to the Yosemite Lodge Area Redevelopment site. As with Alternative 2, vehicle trips generated by a typical peak daily workforce of approximately 85 to 95 individuals (during 12 months of the Phase 1 construction period) would have readily apparent, but localized and temporary, adverse impacts on traffic flow and traffic safety in the project area. Intensive redevelopment activities during Phase 2 (over a 12-month period) would require a typical peak daily workforce of about 75 to 85 individuals.

Construction and demolition activities would generate an estimated 1,070 truck trips over the two-year period of Phase 1. Work during Phase 2 would similarly generate truck trips, with an estimated total of approximately 265 truck trips during the 10-year period. Similar to Alternative 2, there would be about 10 to 16 peak truck trips per day generated by construction and demolition activities over the two-year period of Phase 1, and a similar number of daily truck trips during intensive redevelopment activities of Phase 2.

The adverse transportation impacts associated with the less intensive construction efforts (i.e., construction of the Indian Cultural Center, and revegetation and restoration activities) would be the same as those described under Alternative 2, although there would be a nominal difference in the area to be restored.

Although there would be minor differences in the construction phasing, the overall magnitude and nature of adverse impacts associated with construction of Yosemite Lodge and Camp 4 would be similar to those described for Alternative 2 (i.e., a temporary and intermittent lessening of the capacities of area roadways because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles). Alternative 3 would implement similar mitigation measures as those identified under Alternative 2; these measures would somewhat lessen the adverse construction-related impacts to traffic flow and traffic safety, but would not change the magnitude of the adverse effects.

Impact Significance After Mitigation Included in the Project. Local, short-term, minor to moderate, adverse impact.

Operation-related Effects on Traffic Flow Conditions. The number of lodging units and parking spaces would be the same as under Alternative 2, but the Alternative 3 parking configuration would feature more remote parking than would Alternative 2. A large parking lot (available to guests of any type of lodging unit) would be located at the western end of the Lodge site near the cabins, and a smaller parking lot would be located in the center of the Lodge site.

Like Alternative 2, Alternative 3 would improve traffic flow conditions at park entrances compared to Alternative 1 by increasing the number of overnight accommodation facilities for visitors in the project area, thus shifting the mix of park overnight visitors and day visitors (i.e., more visitors would be able to stay overnight in the park). Conversely, as with Alternative 2, Alternative 3 would increase traffic generated by overnight visitors on local roadways in the project area. As with Alternative 2, employee housing would be relocated to an off-site location, and an employee transportation program would be implemented to offset the number of commuter employee parking spaces removed from Yosemite Valley, as prescribed by the *Yosemite Valley Plan*.

As under Alternative 2, Northside Drive would be rerouted around the south side of Yosemite Lodge, with the same number of travel lanes as under Alternative 1. Vehicles would be routed through a roundabout west of Yosemite Creek Bridge to safely and expeditiously direct traffic south of the Lodge site, resulting in fewer turning movements and smoother traffic flow than under Alternative 1. Alternative 3, like Alternative 2, would improve traffic flow conditions by providing vehicle access to and from short-duration parking spaces near the Lodge's registration building, and to and from the central guest parking lot, via separate one-way roads for entering and exiting vehicles, and also by physically separating different traffic streams (e.g., registering guests and tour bus traffic versus shuttle buses and maintenance vehicles) within the Lodge site. As under Alternative 2, vehicle access to and from the western guest parking lots for Lodge cabins and Camp 4 would be provided via a two-way access road. The turning movements at the above-described access intersections along realigned Northside Drive would operate at a level of service D or better. Through-traffic on Northside Drive would operate at level of service A on the roundabout and through the Yosemite Lodge area.

Like Alternative 2, Alternative 3 would decrease the number of parking spaces in the Yosemite Lodge area from that under Alternative 1. Specifically, the day-visitor parking spaces (for automobiles and buses) would be removed, which would decrease traffic generated by day visitors on local roadways in the Yosemite Lodge area.

Alternative 3 would provide an adequate supply of parking spaces (i.e., one space per lodging unit, plus parking spaces to accommodate overnight guests who do not vacate their parking spaces immediately after checking out, plus disabled-access parking spaces). Day visitors would be directed to the day-visitor parking spaces at Yosemite Village. As described above, however, the Alternative 3 parking configuration would feature more remote parking than Alternative 2, with more parking located at the western end of the Lodge site and less parking provided in the central Lodge area. Parking would be generally located away from the immediate guest lodging areas, which would reduce traffic volumes on the interior roads in the central Lodge area, but could increase occurrences of drivers circling within the central parking lot in search of a parking space closer to their lodging units. As with Alternative 2, the short-duration loading/unloading parking

spaces would be designed to increase convenience to Lodge visitors. However, both the typical and the longest walking distances from parking lot to lodging unit would be longer than under Alternative 1. As with Alternative 2, the loading/unloading spaces would require spot enforcement of time limits to ensure efficient use of those spaces. With guidance given to day visitors and enforcement of time limits for the loading/unloading parking spaces, Alternative 3 would have a local, long-term, minor, beneficial impact on traffic flow conditions on local roadways by slightly decreasing congestion and driver delays caused by the turning movements of conflicting traffic streams.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, beneficial impact.

Operation-related Effects on Traffic Safety/Conflicts. As under Alternative 2, Alternative 3 would have local, long-term, minor, beneficial effects on traffic safety conditions in the Yosemite Lodge area.

As stated above, as under Alternative 2, Northside Drive would be rerouted around the south side of Yosemite Lodge, with the same number of travel lanes as under Alternative 1, and vehicles would be routed through a roundabout west of Yosemite Creek Bridge. Alternative 3 would provide the same improvements to traffic safety as Alternative 2 by reducing conflicts between vehicles and pedestrians along Northside Drive and providing safer pedestrian access between the Lodge and Yosemite Falls. There would also be fewer crossings by pedestrians and bicyclists along the realigned Northside Drive than along the internal roadway within the Lodge area under Alternative 1, though the traffic volume on the realigned Northside Drive would be higher than on the existing internal road.

As described above under Alternative 2, the decrease in the number of parking spaces in the Yosemite Lodge area under Alternative 3 (i.e., through the removal of day-visitor parking spaces that would remain under Alternative 1) would reduce potential conflicts by decreasing traffic generated by day visitors on local roadways in the Yosemite Lodge area. Day visitors currently using the day-visitor parking spaces would be directed to the day-visitor parking spaces at Yosemite Village. Traffic volumes in the Yosemite Lodge area would be reduced from volumes experienced under Alternative 1, which would decrease the potential for traffic safety hazards.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, beneficial impact.

Summary of Alternative 3 Impacts. Alternative 3 would cause local, short-term, minor to moderate, adverse impacts (after mitigation) during site redevelopment; local, long-term, moderate, beneficial impacts to traffic flow conditions; and local, long-term, minor, beneficial effects on traffic safety/conflicts.

Cumulative Impacts

The cumulative impact analysis for transportation under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

The cumulative projects in Yosemite Valley would result in a regional, long-term, moderate, beneficial impact on transportation conditions within the park. The local, short-term, minor to moderate, adverse impact on transportation conditions from project construction activities

would be offset by the beneficial impacts of the cumulative projects. The local, long-term, minor, beneficial effect on traffic flow and traffic safety would be enhanced by the beneficial impacts of the cumulative projects.

Impairment

Impairment is not addressed in the transportation analysis, because this resource topic is peripheral to the protection of the park for future generations.

Park Operations and Facilities

Analysis

Effects on Resources Management. The effects on resources management under Alternative 3 would be similar to those described for Alternative 2. The expansion of Camp 4 would increase the number of human/bear conflicts that would need to be handled by resources management staff. Restoration and revegetation elements of Alternative 3 would have an adverse effect on the resources management division during project construction, in which approximately 37.31 acres would be restored, due to increased demands on resources staff. Because Alternative 3 would restore and revegetate portions of the native ecosystem, intensive long-term maintenance would not be necessary to ensure the long-term viability of restored areas. However, minor levels of monitoring and maintenance would be required due to the high volume of park visitors in this area.

Impact Significance. Local, long-term, moderate, adverse impact.

Effects on Interpretation Services. The effects on interpretation services would essentially be the same under Alternative 3 as described for Alternative 2. Alternative 3 would have a minor adverse impact on interpretation services, because the somewhat increased capacity of both Yosemite Lodge and Camp 4 would result in increased visitation to the park and demand for interpretation services. The adverse effect would be somewhat offset by the improved interpretation facilities that would be provided under Alternative 3, such as the expansion of the Cliff Room and the improvements to the existing amphitheater.

Impact Significance. Local, long-term, minor, adverse impact.

Effects on Concessioner Management. The effects on concessioner management would essentially be the same under Alternative 3 as described for Alternative 2. Concessioner management would experience a clearly detectable increase in demands on staff due to coordination with and management of the concessioner during Lodge construction activities. In addition, Alternative 3 would have an adverse impact on concession management because of the small increase in the capacity of facilities at Yosemite Lodge. The net effect of this alternative on the concessioner management division would be long term and minor.

Impact Significance. Local, long-term, minor, adverse impact.

Effects on Facilities Management. The effects on facilities management under Alternative 3 would be very similar to those described for Alternative 2. Alternative 3 would have a local, long-term but temporary, moderate, adverse effect on the facilities management division during project construction, due to the considerable time and resources these activities would require during Phases 1 and 2. Over the course of project construction, approximately 3,345 linear feet of old

utility lines would be removed (propane, sewer, and water lines at Yosemite Lodge and a sewer line to the former gas station next to Camp 4), and 8,775 linear feet of utilities would be abandoned in place. Over the long term, the upgrade and replacement of aging utility infrastructure at Yosemite Lodge and Camp 4 would reduce some demand on facilities management.

As with Alternative 2, this alternative would also add new facilities at the Indian Cultural Center and Camp 4 that would require ongoing routine custodial, maintenance, and repair work. The increase in campsites, restrooms, and shower facilities at Camp 4 would be the same as under Alternative 2, although Alternative 3 would not include a new cooking pavilion.. During winter months, the expanded trail system in the project area (i.e., an increase of 2,350 linear feet), expanded parking area (i.e., an overall increase of 26 parking spaces due to additional parking for Camp 4 and the Indian Cultural Center), the new Indian Cultural Center site, and expanded Camp 4 facilities would impose new maintenance demands for snow removal on facilities management staff. As with Alternative 2, the overall effect on facilities management would be moderate and adverse.

Impact Significance. Local, long-term, moderate, adverse impact.

Effects on Visitor Protection. The effects on visitor protection would essentially be the same under Alternative 3 as described for Alternative 2. Like Alternative 2, Alternative 3 would expand site facilities, resulting in an increase in demand for visitor protection personnel associated with the larger number of visitors to the project area. As described in Alternative 2, the reduction in the number of guest parking spaces at Yosemite Lodge from 464 to 401 spaces would occasionally increase the need for ranger patrols to resolve parking conflicts during busy periods, resulting in a moderate adverse impact.

During a major flood that affected realigned Northside Drive, traffic exiting Yosemite Valley would be rerouted to the proposed multi-use paved trail, which would place additional demands on visitor protection staff during an emergency situation. These additional demands on visitor protection staff would be clearly detectable, resulting in a moderate adverse impact.

As with Alternative 2, the beneficial effects of Alternative 3 due to fire safety improvements at new facilities and improvements to the utility infrastructure and emergency access would partially offset the adverse effects associated with increased demands on visitor protection staff due to new site facilities, reduced parking spaces, and emergency response, resulting in an overall minor adverse impact on visitor protection staff.

Impact Significance. Local, short-term and long-term, minor, adverse impact.

Summary of Alternative 3 Impacts. Like Alternative 2, Alternative 3 would have a local, long-term, moderate, adverse impact on park operations and facilities due to additional staff demands associated with the new facilities and improvements (including restoration and revegetation) in the project area and the increase in the number of visitors that would be accommodated by these facilities. The adverse effect on park operations of Alternative 3 would be partially offset by the beneficial impact associated with improvements to the existing utility and fire protection system.

Cumulative Impacts

The cumulative impact analysis for park operations under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 3 and the cumulative projects would have a regional, long-term, moderate, adverse impact on park operations and facilities. The adverse impact associated with Alternative 3, including additional demands on park operations staff, would contribute to the adverse effect of increased demand for park operations services and facilities of the cumulative projects.

Impairment

Park operations are not addressed in the impairment analysis, because this resource topic is peripheral to the protection of the park for future generations.

Hazardous Materials

Analysis

Effects of Hazardous Materials Management. Impacts on the environment from hazardous materials management practices under Alternative 3 are the same as described under Alternative 2. The project would have a long-term but temporary, moderate, adverse impact during Phase 1 and Phase 2 demolition and construction activities, due to the potential use of heavy equipment that could leak toxic fluids, and to the use of such materials as solvents and fuels.

Implementation of mitigation measures specified in Appendix C, Mitigation Measures Common to All Action Alternatives, and implementation of a spill prevention and pollution control program for hazardous materials (see Appendix C) would reduce the magnitude of this effect to local, long term, temporary, minor, and adverse.

As with Alternative 2, the adverse impact associated with hazardous materials management would be further reduced through the incorporation of sustainable building concepts into the design, construction, and operation of the new facilities, as specified in National Park Service management polices, which may somewhat lessen the quantity of hazardous materials needed for site maintenance and operations relative to those currently used.

Impact Significance After Mitigation Included in the Project. Local, long-term, negligible, adverse impact.

Effects of Underground Storage Tanks and Hazardous Materials. Impacts on the environment from potential underground storage tank releases under Alternative 3 are the same as described under Alternative 2. Although the known, unused underground storage tanks have been removed, unknown tanks could remain. There is the potential for tanks associated with a former gas station near the current kitchen loading dock to remain, and, although unlikely, for an underground tank to be located near the Camp 4 restroom. Alternative 3 proposes the construction of new housekeeping and storage facilities in the vicinity of the former gas station. An underground tank could remain undetected during project construction, resulting in a moderate adverse impact due to the potential for tank vapor emissions to enter newly constructed, overlying structures and/or to leak fuel, thus contaminating soil and groundwater.

Mitigation measures included as part of the project (see Appendix C, Mitigation Measures Common to All Action Alternatives) would reduce the magnitude of the identified adverse impact by ensuring that any tanks remaining in these two areas would be removed prior to project construction and that appropriate procedures would be followed in the event that unknown tanks elsewhere at the project site were discovered during construction.

Impact Significance After Mitigation Included in the Project. Local, long-term, minor, adverse impact.

Effects of Current Remediation Sites. Under Alternative 3, beneficial impacts on public health and safety associated with placement of site facilities at fully remediated sites would be the same as described under Alternative 2.

Impact Significance. Local, long-term, negligible, beneficial impact.

Effects of Asbestos-containing Materials, Lead-based Paint, and PCBs. Under Alternative 3, impacts on the environment due to potential releases of hazardous materials would be the same as described under Alternative 2. Site assessments have established that some buildings to be demolished under this alternative contain asbestos materials. Indiscriminate and unmitigated demolition of structures could result in asbestos dust emissions. Removal of electrical substation transformers and capacitors prior to draining PCB-containing fluids could result in the release of PCBs to the environment. These actions would have a short-term, moderate, adverse impact on the environment.

Mitigation measures included as part of the project, including compliance with applicable regulations (see Appendix C, Mitigation Measures Common to All Action Alternatives), would reduce the magnitude of the identified impact to negligible.

Impact Significance After Mitigation Included in the Project. Local, short-term, negligible, adverse impact.

Summary of Alternative 3 Impacts. As with Alternative 2, construction activities could result in the release of hazardous materials, resulting in a moderate, adverse impact to the environment. Implementation of mitigation measures, such as a spill prevention and pollution control program, preconstruction surveys, and compliance with applicable hazardous materials management regulations, would reduce the magnitude of the adverse impact to negligible to minor. Overall, Alternative 3 would have a local, long-term, negligible, adverse impact on the environment. The beneficial impact of siting new Camp 4 facilities at a remediated site would partially offset the adverse effect of potential releases of hazardous materials into the environment.

Cumulative Impacts

The cumulative impact analysis pertaining to hazardous materials under Alternative 3 is the same as described under Alternative 1. See the discussion of cumulative effects under Alternative 1.

Alternative 3 and the cumulative projects would result in a regional, long-term, minor, adverse impact on the environment. Alternative 3 would negligibly contribute to the adverse effects of the cumulative projects associated with the use, storage, or accidental release of hazardous materials during construction of the cumulative projects.

Impairment

Alternative 3 would have a local, long-term, negligible, adverse impact on the environment. These effects would be localized and would not be considered severe. Therefore, Alternative 3 would not impair park resources within Yosemite National Park.